THE DENTAL DIGEST

FEBRUARY, 1937

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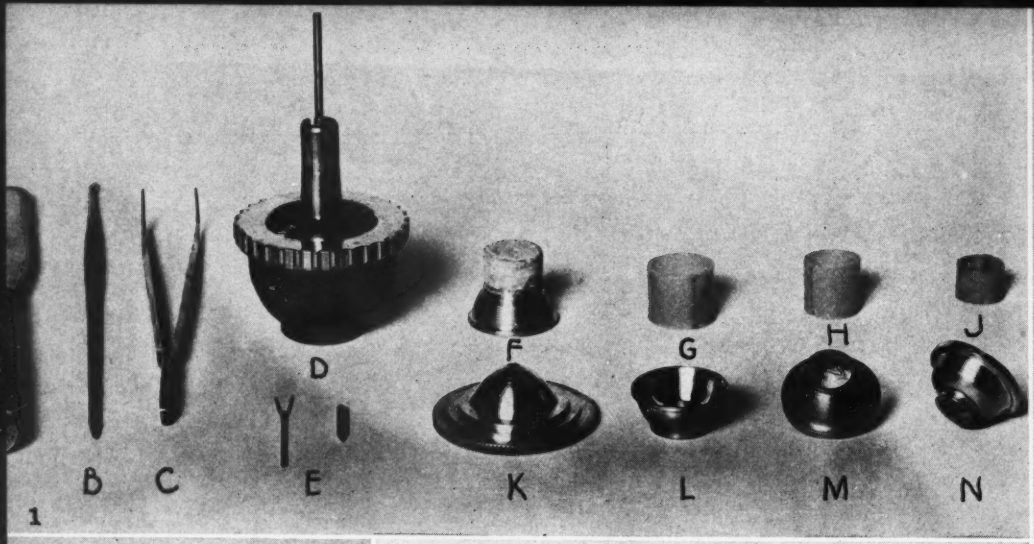
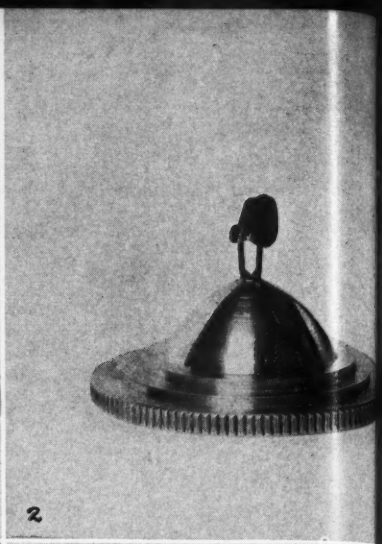
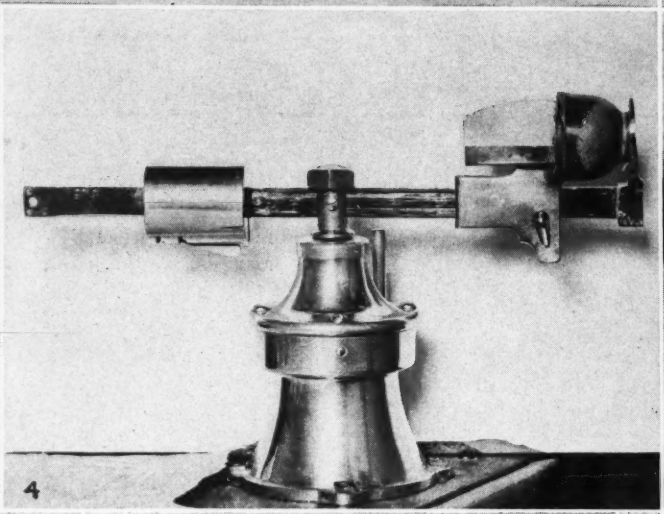
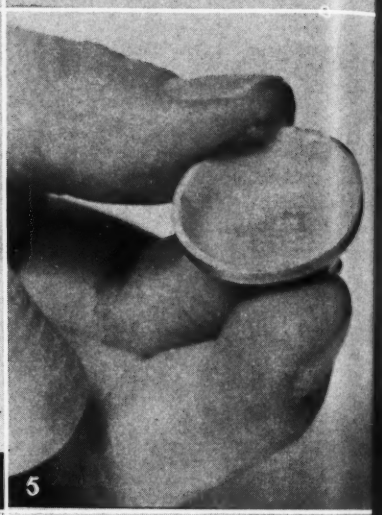
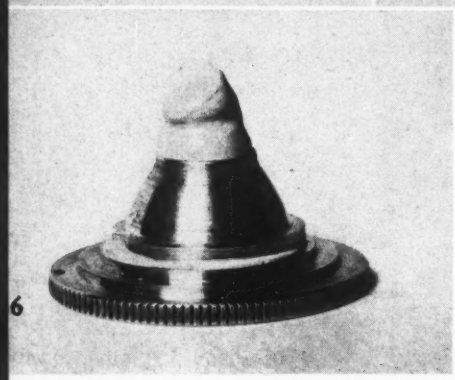
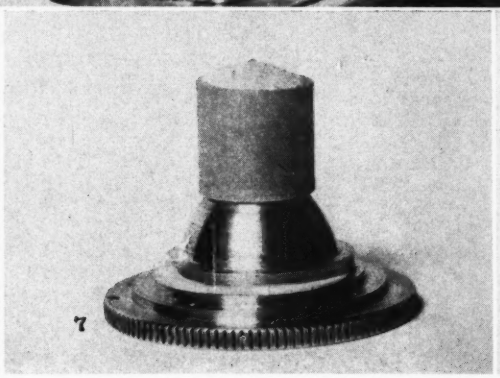


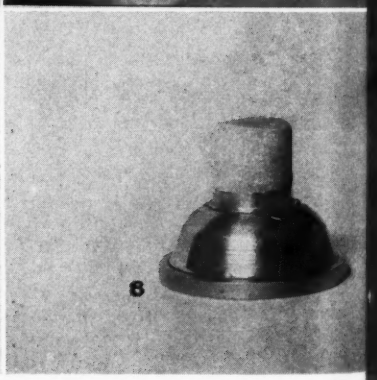












A Simplified Inlay Technique

THOMAS H. RAGATZ, D.D.S., Prairie du Sac, Wisconsin

MANY IMPROVEMENTS HAVE been made in the cast gold inlay process since the late W. H. Taggart placed it on a practical basis back in 1907. Authorities today, however, still advocate the use of from 40 Gm. to more than 50 Gm. of investment for inlays. Inlay wax patterns weigh approximately from one-quarter to 1½ grains, the average being below 1 grain. By weight, therefore, from about 400 to upward of 3,000 times as much investment as wax is used. It is surprising that dentists for so long a period have used so much investment which necessitates the use of gas or electric furnaces, and makes it necessary to spend from thirty to ninety minutes in the elimination and casting process.

A great deal of experimentation with practical cases and several hundred test casts made for crown dies, M.O.D. steel dies, and metal tooth forms has convinced me that accurate inlays can now be made in a fraction of the usual time by using a small amount of investment and small rings, and spending only from three to five minutes with blow-pipe heat in the elimination and casting

Fig. 1—A, Spatula; B, brush; C, pliers; D, small mechanical mixer; E, sprue pins; F, large ring with invested case; G, H, and J, wax cylinders; K, sprue former; L, large ring; M, medium ring, and N, small ring.

Fig. 2—Mounted wax pattern on sprue former.

Fig. 3—Empty ring mounted on sprue former showing that wax patterns when invested are entirely outside of ring.

Fig. 4—Cup containing hand-spatulated investment in position for centrifugalization.

Fig. 5—Proper amount of investment in ring.

Fig. 6—Ring with investment in position on sprue former.

Fig. 7—Wax cylinder mounted on small end of ring and filled with investment.

Fig. 8—Invested case with wax cylinder and sprue pin removed ready to be mounted in back plate of centrifugal casting machine where the elimination process takes place.

process. Gold inlays made with this technique should be acceptable to exacting inlay technicians. Success with this simplified technique does not depend on any trick, sleight-of-hand or extraordinary skill, but can be had by anyone capable of handling the longer and more complicated techniques in use today.

Technique

1. With a small mechanical mixer, 1 tablespoonful (8 Gm.) of accepted investment which can withstand sudden high heat is mixed with the proper amount of water according to individual requirements. If a small mechanical mixer is not available, the investment may be spatulated thoroughly by hand in a small cup.

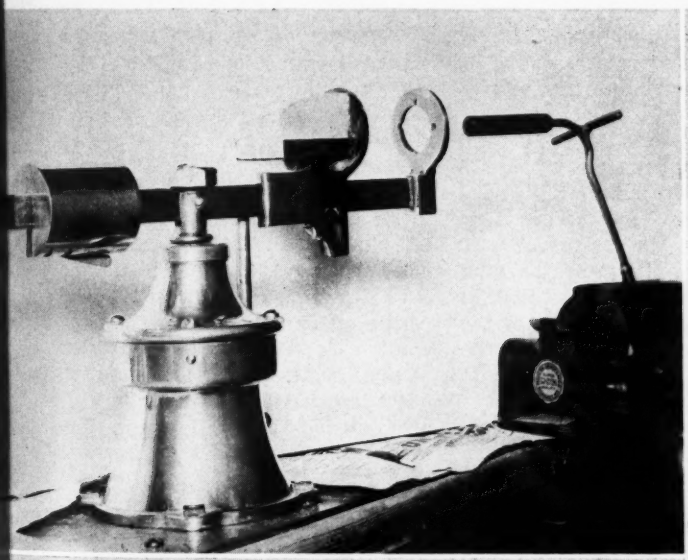
2. Place cup with hand-spatulated investment in centrifugal casting machine and centrifugalize investment with about the force used for casting purposes (Fig. 4). This removes most of the small air bubbles, and makes the investment more homogeneous.

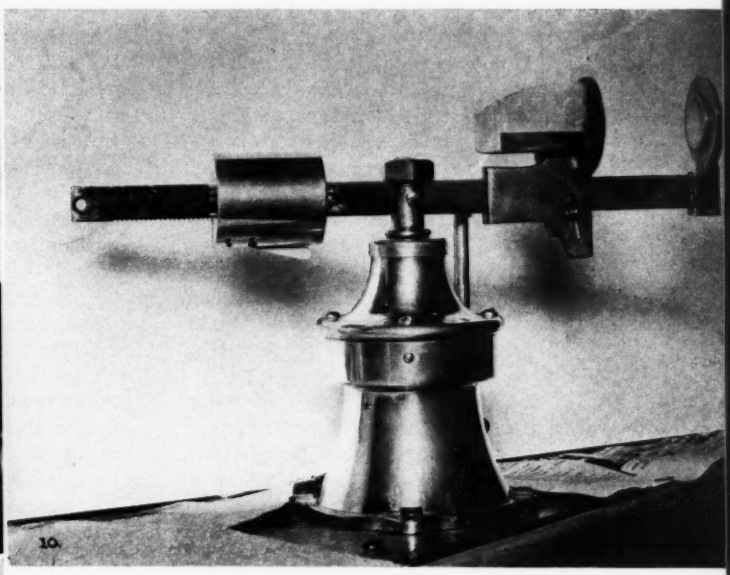
3. A small amount of investment is placed in a ring (Fig. 5), the large opening of which is held upward while the finger covers the small opening. The entire inside of the ring surface is covered, and the ring is tapped to remove air bubbles. The ring is mounted on an oiled sprue former (Fig. 6). Be sure to seat the ring properly. A considerable part of the investment will be forced up through the small end of the ring.

4. The mounted wax pattern is covered with investment and vibrated slightly in the usual manner. With a pair of pliers, the sprue pin is pushed into the oiled hole of the sprue former until the end touches the bottom. This sprue pin must fit loosely in the sprue hole and be of such length that the mounted wax pattern will be just above and outside of the small end of the ring (Fig. 3).

5. Mount the oiled wax cylinder or asbestos cylinder on the small end of the ring and fill with investment;

(*Continued on Page* 84)





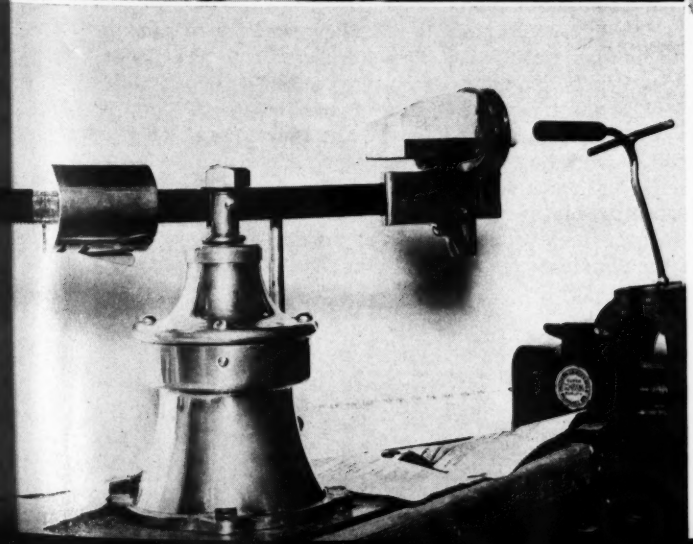


Fig. 9—Slightly altered casting machine (63/64 inch hole drilled in back plate directly opposite and in line with hole in crucible carriage) and blow-pipe in proper position.

Fig. 10—Case mounted in back plate of centrifugal casting machine.

Fig. 11—Ready for three-to-five minute elimination and casting process.

Precision in Jacket Crown Construction

E. C. CLENDENIN, D.D.S., Palo Alto, California

IN THE TECHNIQUE presented here for constructing the porcelain jacket crown, I use the Stansbury precision instrument.

The difficulty in inserting the die with the porcelain in place in the ordinary plaster model without breaking portions of it off is well known. The contacts of the teeth have to be cut away to permit the die to slide to place, and in so doing the contact guide is lost. When the teeth are articulated they cannot be triturated. Only a direct up and down motion is possible. This method may be compared with a model mounted on an instrument with wings that will slide in and out paralleled with the contact points of the teeth, and permitting the die to be removed at will with a definite seat and no danger of breaking the porcelain; then, the contact points are not disturbed.

Impression

An upper right central with the tooth well prepared will be considered to illustrate the technique.

1. The wax bite is taken to get the relation of upper and lower teeth (Fig. 1, A). The upper and lower impressions are taken with sharp outlines. The operator should especially preserve the anatomy of the teeth on the opposing lateral and central of the tooth being crowned. A plastic impression material is preferred by many for this purpose (Fig. 1, B).

2. The plaster or plastic impression material on the upper impression is gently trimmed away from above downward to within about 2 mm. of the gingival line, so as not to have it too high (Fig. 1, C). The impressions of upper and lower should extend as far back as the first bicuspid to provide an occlusal guide for determining relationships (Fig. 1, C).

3. The minor impression is now taken. A sharp outline of the shoulder should be recorded (Fig. 1, D).

4. A small strip of wax is cut about 2 mm. in width or a little more as shown in Fig. 1, E.

5. Mark the impression with a cross or some symbol to indicate the labial side. Wrap the wax band around the minor impression so that the seam will come directly over the labial marking.

6. Warm a little and wrap the wax around and seal it as in Fig. 1, F.

7. Trim away the wax on the inside so as to be beveled slightly from the outer edge of the shoulder to the outer and lower edge of the wax as in Fig. 1, F. This trimming of the wax leaves the die in a cone shape just above the shoulder when the die is cast and permits the platinum coping to be removed without dragging (Fig. 1, J).

8. Around this wax, place another strip of wax long enough, so that the root will extend about 1 inch above the shoulder of the die (Fig. 1, G).

9. Stand it in a ring full of plaster mixed medium thin (Fig. 1, H). The ring should be made of paper in order to be removed easily.

10. Mix the amalgam thin, and mix well; then roll in a large thin roll, insert and vibrate into the impression.

11. Remove plaster (Fig. 1, J) and trim off excess amalgam from the sides of the root to make it fit into the sleeve with plenty of space on the side permitting the die to tilt back and forth to allow the tooth to stand on the instrument when mounted in the same position as it does in the mouth (Fig. 1, K). Fig. 1, L shows the die in position in a sleeve similar to that on the instrument.

12. The stone model is now run. Place the die in the proper position in the elastic impression material, holding the impression in such a way that the die will stand perpendicularly, for it is heavy and might tend to slip out or rotate (Fig. 2). Do not press hard on the die when putting it to place; merely seat it. If too much pressure is applied, it will make the crown too short when finished.

13. The artificial stone having been mixed thin enough, with a pointed camel's hair brush the stone is teased into the impressions of the adjoining teeth first, then the remaining teeth.

14. With a spatula fill in and smooth until it resembles Fig. 3. If the model is too thick the die will not be long enough to fit into the sleeve. The stone should be absolutely free from shrinkage or expansion; otherwise it will alter the contact point.

15. When the stone is hard, separate. When the opposing teeth are run and separated, mount.

Fig. 4 shows the instrument with one side showing the wing in contact position, the other distended. In the center of the body of the instrument is a slot (Fig. 4, A) in which is placed a small sleeve (B) which eventually holds the die. The side on which the sleeve is inserted should always be held toward the operator. It represents the labial, or if bicuspids or molars are being treated, the buccal aspect. The arm carrying the opposing cast is attached on the opposite side.

16. Place the sleeve in and out a few times to be sure it is well seated; then, with a knife make a mark on the lower edge of the receptacle to mark the seating point.

17. At this point it is necessary to set the opposing cast for either an upper or lower tooth. This description is for the upper; the lower, of course, would be the reverse. Fig. 5 shows a cut of the arm that carries the cast of the opposing teeth. On the back end is a slot with a screw (Fig. 5, A) at right angles to it and dividing the space into halves. It is slightly bent at an angle of about 30 degrees. The reason for dividing it into halves is that when the pin is in place the operator can put the bearing pin (Fig. 5, B) in one or the other; when the small screw (Fig. 5, A) is removed, it will allow the arm to slide in the direction away from the pin. If the mounting is for the upper teeth, the curve should be pointed downward toward the swivel on which it rests. It corresponds in action to the mandible in the glenoid fossa, and the bearing pin should be set anterior to the dividing pin. In the case of a lower tooth the shank should be turned over

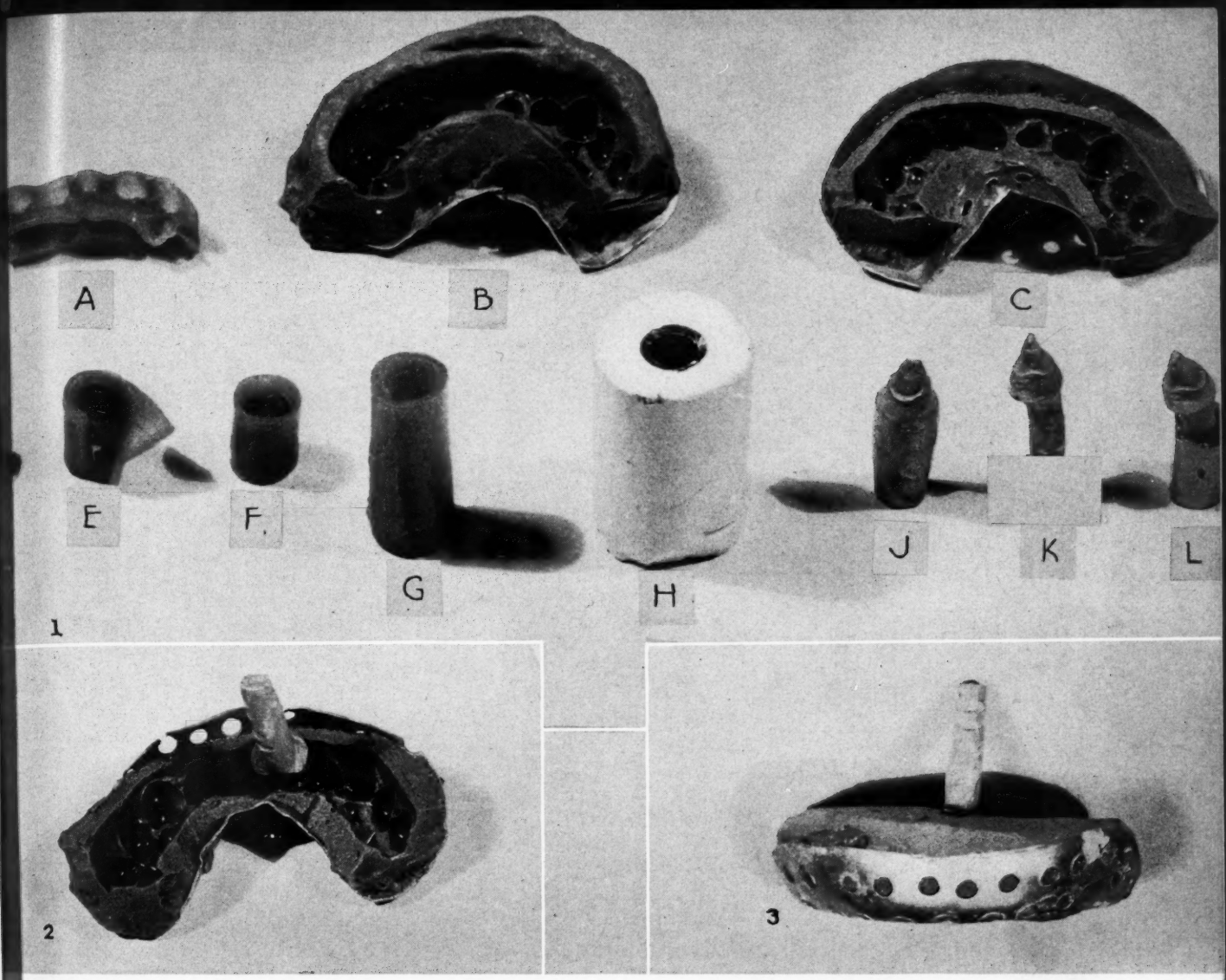


Fig. 1—A, The bite as taken in wax to get the relation in mounting; B, a good clean cut impression as it is taken from the mouth, showing all the teeth necessary for upper anterior teeth; C, how the impression should be trimmed ready to receive the die; D, minor impression with a good shoulder and a small cross indicating the labial side; E, wax matrix around the minor impression partly unfolded to show the minor impression and the distance the wax should extend above the impression and also where the wax should be joined; F, wax matrix in place and the end trimmed to leave the die slightly cone-shaped just above the shoulder of the die; G, the second matrix of wax in which the alloy is later run or jarred to place, giving the comparative length of the root of the die; H, the die standing in the plaster ring ready for the amalgam; J, the die in the rough as it comes from the plaster ring when separated; K, the way the die should be trimmed in order to allow for adjustment on the instrument; L, the die standing in a sleeve as it will have to be placed on the articulator.

Fig. 2—The die placed in the major impression in the proper position for running the plaster, together with the proper trimming of the impression so that the cast will not be too thick.

Fig. 3—How the model should appear when it is run before it is separated.

the bearing pin placed in the farthest hole from the pin (Fig. 6).

Mounting

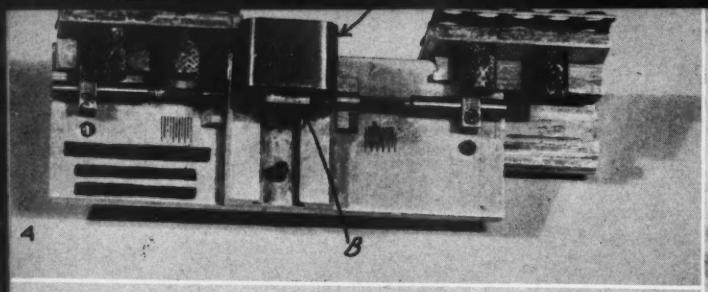
1. First place a fairly strong rubber band around the two wings and see that the contact points are clean and in contact.

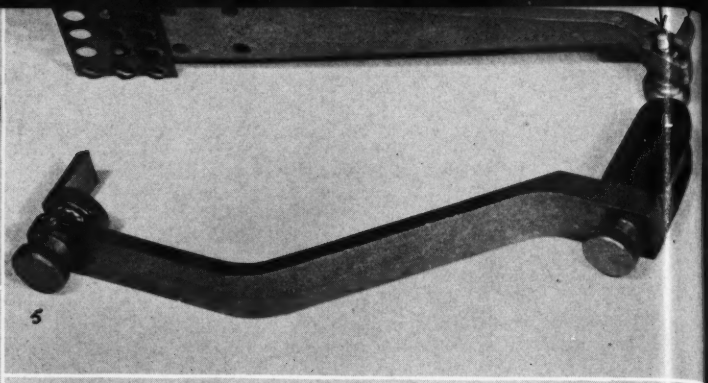
2. Then place the plaster cast containing the die in position on the instrument with the contact points in line with the wings and the occlusal plane of the teeth at right angles to the body; the opposing teeth can then be properly articulated (Fig. 7).

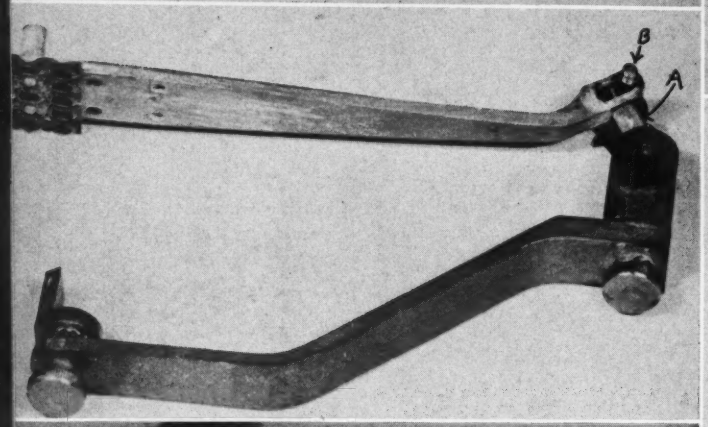
3. When the position has been tested and the die has been ground enough to permit placing in proper relation, mix the plaster thin and work it into the sleeve, then into the plates on the wings. The rubber band being in place holds them together so that they will not move. Holding the finger under the sleeve keeps the plaster from pushing out and assures a close adaptation to the die.

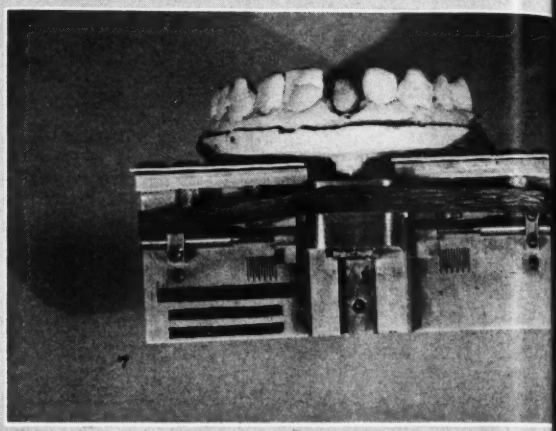
4. When the plaster has set, the bite wax is placed and the opposing teeth and wax are put to place (Fig. 8).

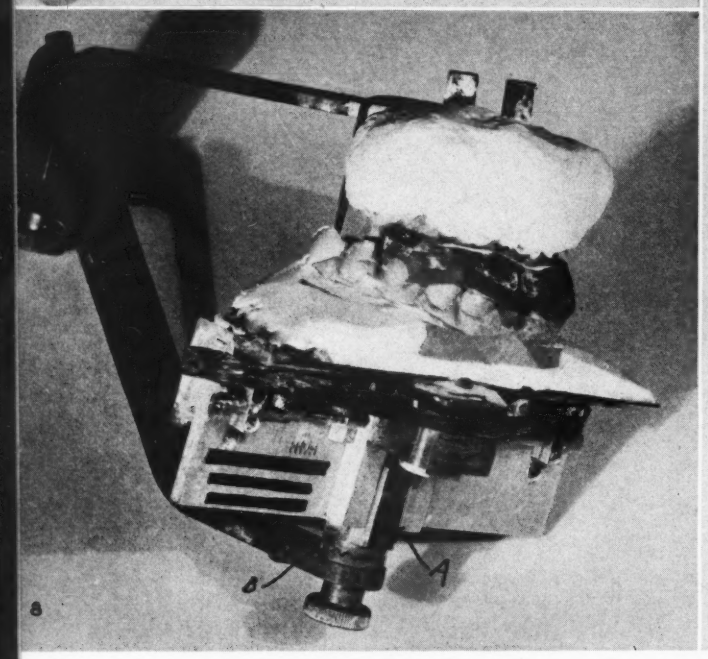
5. The opposing cast is now attached. Place the small shank (Fig. 8, A) in the receptacle at the bottom











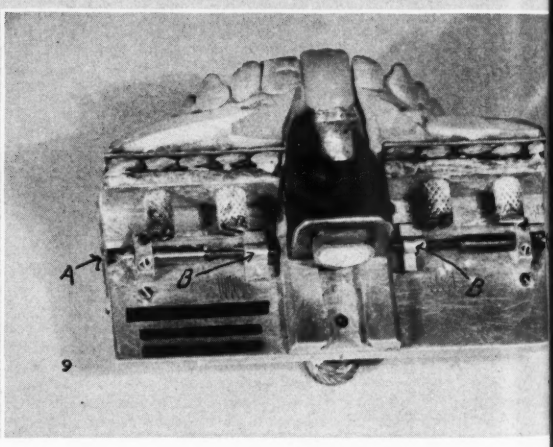


Fig. 4—The instrument unmounted with one wing in contact and the other distended to the right. In the center of the body is seen a rim or slot, marked A, in which is placed a small sleeve, marked B, which holds the die when mounted. This side should always be held toward the operator as it is the front or labial or buccal side.

Fig. 5—The arm that carries the opposing teeth and takes the place of the mandible. On the back end it is slightly curved, and in the center is a slot which corresponds to the glenoid fossa. In the center of it is a screw marked A, dividing it in halves. When in place, the operator can put the bearing pin, marked B, either before or behind, and when the screw marked A, is removed after mounting, the operator can register protrusion or retrusion as indicated.

Fig. 6—The arm reversed with the bend or curve turned upward. The pin marked B is placed in the distal position of the pin marked A. It is just the reverse from the one shown in Fig. 5.

Fig. 7—Machine with rubber band in position holding the contacts in position and the cast containing the die in position as it should be when mounted on the articulator.

Fig. 8—Models mounted on the articulator as they should be for an upper central incisor. The rubber band still in place, holding the wings together while the plaster is setting. It is all ready to separate. The small shank (A) is in place, and the screw at the bottom is in place, which opens the swivel that adjusts the arms of the articulator.

Fig. 9—Instrument mounted properly with the plaster model separated, and the screws (A) are turned out bringing out the false shoulder (B) until the wings are held out enough to allow for the biscuit. The biscuit crown is in place on the instrument.

of the anterior part of the body of the instrument and adjust the swivel (Fig. 8, B) by means of the screw in order that the long axis will correspond to the median line of the palate (Fig. 8).

6. When the arm has been adjusted, mix the plaster the same thickness as before and attach the opposing cast as in Fig. 8. When the plaster is set, remove the arm and set it aside until the crown has been made to approximate relationship.

7. With a sharp knife cut the plaster labially and lingually to the die, always cutting from the incisal toward the root to prevent displacing or mutilating the casts (Fig. 9). Then trim out at the bottom for better vision. Remove the dust and chips of plaster.

Crown Preparation

1. After the platinum matrix has been burnished, the die is placed in position. With a small screw driver, turn the small screws on each end of the wings (Fig. 9) until the shoulder (Fig. 9, B) engages the wing, opening the original contact a little more than the anticipated shrinkage. This will admit bringing the wings in and out as a guide to contact point relation without danger of breaking the porcelain.

2. From this point on, any method may be used by making a form and vibrating the porcelain, placing it in position with a spatula, and spatulating. The advantage is the ease with which the die can be placed and removed without breaking.

3. When the crown is finished and ready for the final adjustment, screw in the small lugs or screws on each end, and with a marking paper held between the contact points of the teeth, apply light pressure against the wings, bringing them together and marking the excess to be removed.

4. Remove the die with tooth in place and with carborundum paper disc, polish until the contact points of the teeth (Fig. 10, A) and the contact points on the instrument (Fig. 10, B) touch simultaneously. A perfect contact will thus be obtained. Remember not to grind on the instrument, as the emery grit will ruin the slide.

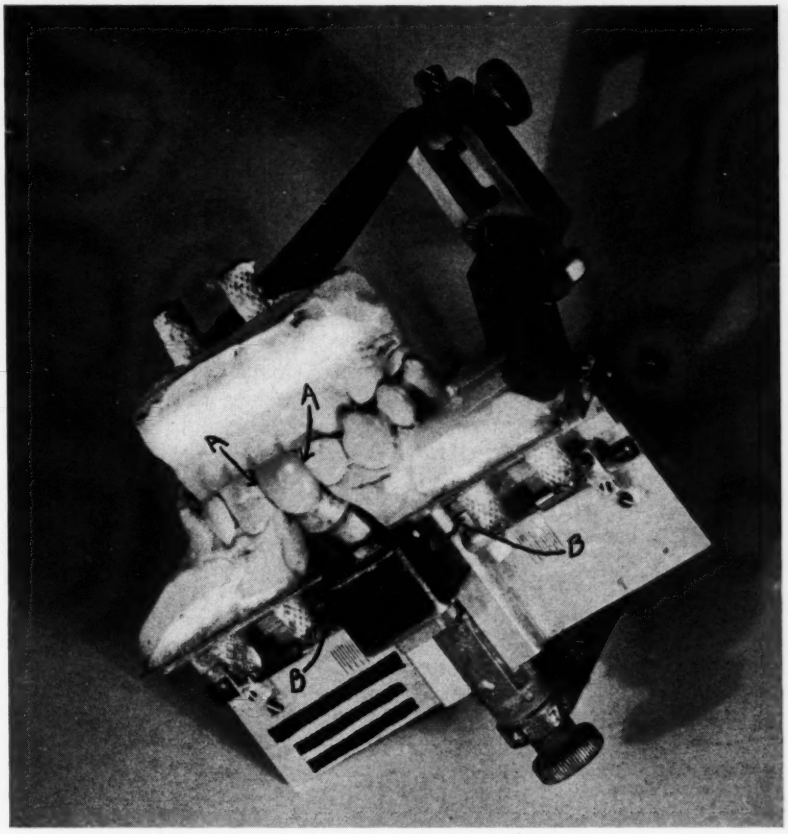


Fig. 10—Instrument with the two screws (A) shown in Fig. 9 screwed in until normal contact is restored. The jacket crown is in place and the contact points ground until they and the contact points of the instrument touch at the same time. The articulator is in place showing the teeth occluding perfectly.

5. Replace the opposing cast and finish the crown to proper relation with the opposing teeth. Remove the screw (Fig. 5, A) which will allow for the protrusion movement. When occlusion and contact are correct, take the matrix out and place in the mouth. If details in impression taking and mounting have been accurately carried out the crown will fit perfectly.

The small plates on the wings of the instrument and the opposing cast may be removed, and together with the die, filed away with the color chart. If the crown ever breaks, another can be made from the old model by remounting.

Medico-Dental Building.

What Twelve Hundred Patients Know About Dentistry*

PART II

3. *What Do You Think Causes Tooth Decay?*—It was surprising to find 414 patients who considered diet a factor in the causation of caries; likewise the small percentage who attributed caries to bacteria (88 replies out of 1787) was surprising.

It would be interesting to know from what sources patients received their information with respect to the dietary influence on dental caries. If it was entirely from commercial sources a great deal of the information is probably unreliable. In any educational direction, the dental profession has a two-fold responsibility: to perpetuate accepted scientific truths and to counteract half-truths and inaccuracies.

When we realize that the dietary emphasis in the problem of dental caries is a comparatively recent one, we are led to wonder whether patients are expressing in their replies the contemporary enthusiasms of their dentists. The specific cause of dental caries is not known. We are safe in saying only that the disease is a complex mechanism influenced by heredity, local factors (character of saliva, type of pabulum for bacterial growth), constitutional states, and nutritional levels. In view of available facts, we must deprecate any tendency to classify dental caries as strictly a form of dietary imbalance. Throughout the years investigators have repeatedly made statements, such as "A clean tooth never decays," "Candy is bad for your teeth," and expressions regard-

*A study conducted by the Editorial Staff of THE DENTAL DIGEST in cooperation with thirty-seven practicing dentists whose names were listed in the January issue.

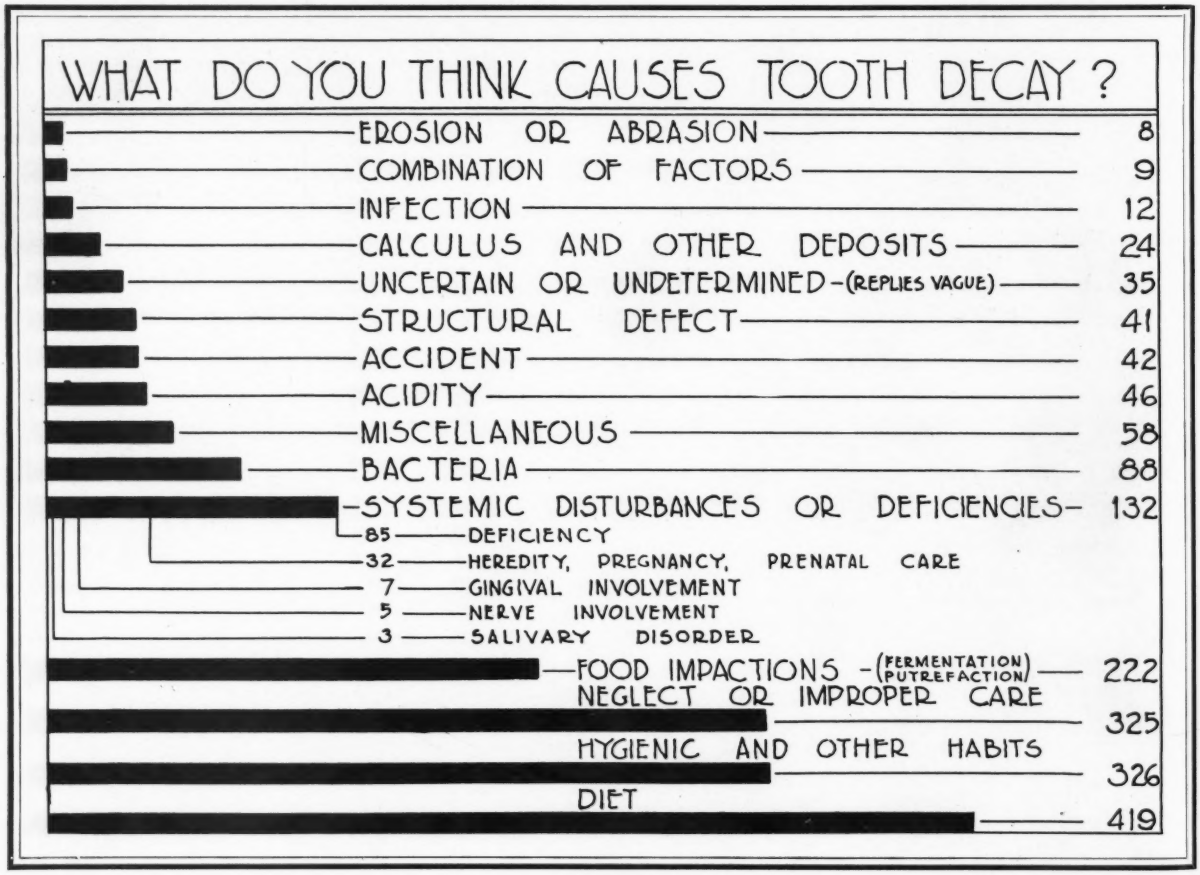


CHART 3

TABLE 3—WHAT DO YOU THINK CAUSES TOOTH DECAY?

ORIGINAL CLASSIFICATIONS: 160 **TOTAL REPLIES: 1787**

1. **Diet: 419**
   Too many sweets, 50; improper food (diet), 323; soft foods, 11; lack of necessary vitamins, 13; lack of vitamin D, 1; malnutrition, 2; not eating foods that exercise the gums, 3; insufficient calcium phosphate, 2; lack of minerals in diet, 3; not eating enough vegetables with iron in them, 1; improper foods when young, 4; stale food, 1; lime deficiency in diet which results in softening the teeth, 2; too much sugar, also lack of the biochemic or cell salts in the system. Consult Boericke and Tafel, mfgs. of them) 1; not enough fruits and vegetables, 1; certain elements in modern food aid greatly, 1.

2. **Hygienic and other Habits: 326**
   Improper and irregular cleaning, 309; unsanitary conditions of the mouth, 1; improper tooth and mouth hygiene, 1; most people do not clean their teeth properly, 5; filth, 2; clean teeth do not decay, 1; drinking warm and then cold water cracks the enamel, 1; tobacco habits, 1; toothpicks, 1; a person should never touch a tooth with a pin, 1; smoking, 1; lack of hygienic measures, 1; poor toothpaste or powder, 1.

3. **Neglect or Improper Care: 325**
   Neglect, 162; incorrect brushing technique, 21; misuse of the teeth, 3; biting hard objects (sharp objects), 4; neglect of regular dental visits, 42; not having cared for sore gums, 1; improperly cared for gums can affect the teeth, 2; lack of timely attention, 4; lack of proper care, 71; lack of dental care, 2; faulty fillings, 1; abuse, 1; carelessness, 3; neglected cavity, 3; wrong kind of paste and brush, 1; improper knowledge of how to care for them, 2; lack of care in childhood, 1; lack of prevention and attention at the proper age, 1.

4. **Food Impactions (Fermentation and Putrefaction): 222**
   Fermentation and decay of food impactions, 206; chemical action of foods, 11; food deposits, 2; decomposed food, 2; food in the pockets about the teeth causing bacterial growth and decay, 1.

5. **Systemic Disturbances or Deficiencies: 132**
   a. Deficiency: 85
   Lack of calcium in system, 39; lack of essential elements in body, 31; lowered resistance, 3; disorder of the body, 1; from some sickness, 2; breaking down of tissues, 1; unbalanced minerals in body, 1; lack of lime in the system, 5; lack of calcium content in the system weakening the enamel which protects the tooth, 1; when the body does not get enough of certain elements it steals these elements from the teeth, 1.
   b. Heredity, Pregnancy, Prenatal Care: 32
   Poor teeth due to prenatal diet neglect, 7; heredity, 18; pregnancy, 5; sometimes bad teeth are hereditary, 2.
   c. Gingival Involvement: 7
   Poor circulation in gums, 1; diseased gums, 3; gums, 1; not taking care of the gums, 1; some diseases of the gums, 1.
   d. Nerve Involvement: 5
   The nerves are not functioning right, 1; exposed nerve causes tooth decay, 1; devitalized nerve, 1; a dying or dead nerve, 2.
   e. Salivary Disorder: 3
   Poor saliva, 1; lack of proper juices in the mouth, 1; perhaps improper chemical composition of salivary secretions, 1.

6. **Bacteria: 88**
   Germs, 21; bacteria, 50; micro-organisms eat through enamel, 1; micro-organisms, 1; an infection in the tooth caused by bacteria which have accumulated in the mouth, 3; action of organisms on tooth enamel, 4; germs get into a crack in the tooth, 6; bacteria getting a foothold where the enamel has chipped or worn away, 1; ultra-microscopical virus or bug, 1.

7. **Miscellaneous: 58**
   Lack of use (exercise), 9; malocclusion (badly formed teeth) 9; medicine, 2; broken teeth, 13; pyorrhea, 5; trench mouth, 1; ignorance, 1; age, 2; I've seen sound teeth in the mouths of careless people, 1; rings put on by orthodontist, 1; pressure of one tooth against another, 1; abscess, 3; badly nourished teeth or congenital defects are contributing causes, 1; poor orthodontic work aggravates it, 1; diseased food supply, 1; wet or damp feet, 1; when air gets into a cavity, 1; filling or gold next to another tooth, 1; worry, 1; decay is started by food, etc. touching the unenameled part of a tooth, 1; use of strong medicines, 2.

8. **Acidity: 46**
   Acid mouth, 23; acidity, 23

9. **Accident: 42**
   Injury to enamel, 37; injury to teeth, 1; a bruise, 1; accident, 1; chipping may hasten decay, 2.

10. **Structural Defect: 41**
    Soft enamel, 14; soft teeth, 22; faulty tooth structure, 1; poor bone structure, 1; brittle teeth, 1; imperfect dentine, 1; a weak spot in the tooth, 1.

11. **Uncertain or Undetermined: 35**
    Do not know, 17; no answer, 8; various things, 2; caries, 3; I wish I knew; is it lack of cleaning or improper diet? 1; unhealthy mouth, 1; the depression has never determined definitely the cause, so my guess wouldn't be much good, 1; if anyone was sure of this a cure would result, 1; undetermined, 1.

12. **Calculus and other Deposits: 24**
    Tartar that forms at the base of the teeth, 1; accumulation of tartar, 3; tartar, 12; film, 6; foreign substances, 1; film on teeth which eats away the enamel, 1.

13. **Infection: 12**
    Infection, 10; infection of the bone or enamel, 1; infection of root, 1.

14. **Combination of Factors: 9**
    A fracture without proper attention afterwards, 1; lack of vitality and trauma, 1; many things, dependent upon the persons, system, etc. I doubt if the finest dentist could give the definite cause, 1; decomposition and decay caused by prenatal diet deficiency and aggravated by failure to observe rudimentary oral health, 1; erosion of the enamel and the tooth body itself by acids in the mouth; resistance to decay often depends on the diet, 1; hard candies, excessive amounts of citrous fruits, and faulty restorations, 1; improper food and care in early life, 1; lack of proper care during the formation period of the tooth plus continued inadequate diet or poor health, 1; nervous troubles or worries that affect the digestive system causing an acid secretion to attack teeth at gum line and cause acid erosion, 1.

15. **Erosion or Abrasion: 8**
    General wear and tear; cleaning helps prevent decay, 1; eating away of enamel (a direct cause), 2; natural wear, 4; enamel worn from teeth, 1.

ing the bacterial theory of dental caries. We are at a loss, therefore, to account for the little attention paid in these responses to the local causes of caries.

It does appear that patients are receptive to the opinions expressed by their dentists, which is another way of saying that people are quick to act according to suggestions concerning the cause of dental disease as well as the treatment. If this is so the dental profession owes the public information concerning what is known about the causes of dental

TABLE 4—WOULD YOU LIKE AN INJECTION OF A LOCAL ANESTHETIC WHILE HAVING A TOOTH DRILLED?

ORIGINAL CLASSIFICATIONS: 150 **TOTAL REPLIES: 1174**

1. Affirmative: 494

Yes, 453; it would help, 4; yes, for my teeth are so hard, 1; it would be a big help, 3; yes, it relieves the system of shock, 2; yes, it gives the dentist a better chance to do his work properly and without pain, 2; yes, but do not insist because of after-effects, 1; yes, it eases the nerves and the patient, and simplifies dental work, 2; I always insist on this, 1; yes, why suffer unnecessarily? 3; yes, better for Dr. to work and also for patient, 1; yes, it eliminates a lot of unnecessary pain and saves time for both dentist and patient, 1; a prick is better than to bear all the pain, 1; yes, the after-effects aren't as bad as having a drill hit a nerve, 1; yes, always—for the psychological effect if for no other reason, 1; fine thing; steadies the patient and the dentist can do his best work, 2; yes, a person isn't so apt to jump and interfere with the dentist, 1; yes, it saves my nerves, 1; yes, for comfort and time saving, 2; yes, to get more done in a given time, 1; yes, I believe it would make some of us more anxious to have our teeth filled, 1, yes, it quiets the nerves, 4; yes, sure, if it does any good, 1; yes, it is easier on the nerves, 3; I think I would as the dentist could do a more complete job with the tooth, 1.

2. Negative: 370

No, 318; not unless the dentist's tolerance gave out before mine, 1; do not like to have it or take gas, 1; no, may cause a weak heart, 1; no, the needle is worse than the drilling, 1; no, it's more distressing and painful than careful drilling, 1; no, the after-effect is not pleasant, 12; no, I believe an anesthetic is more or less injurious, 1; personally no, but it is indicated in many cases, 1; no, I feel the dentist needs the information that nerve response can give, 5; not I; but I understand some patients like it (funny question!) 1; no; would rather have the pain, 1; no; if properly done it is not necessary, 2; no; a cavity can be prepared without pain, 1; no; to me a numb sensation is less endurable than pain, 1; no; takes more time and is more expensive, 1; I would rather not have any of that dope, 1; no; not if the dentist is skilled, 2; no; because the dentist can do better work without it, 2; no, because the extent of pain helps the dentist to know how deep it is safe to drill, 1; no; I do think some dentists could be less calloused about the operation, however, and not keep it up too steadily, or work as though they were drilling a hole in some inanimate substance. They might realize that some people have more sensitive teeth than others, or thinner walls to their teeth, 1; I do not like the after-effects of the anesthetic, 1; no; it might give me a headache, 1; drilling a tooth is no picnic, but neither is the local anesthetic. I do not know of any I'd like to have, 1; no—too much poison, 1; no, because a filling cannot be put too close to a nerve, 1; no—makes me weak and nervous, 1; no, the anesthetic is worse than the drill, 1; no, an injection is more painful than drilling and does not always relieve "mental" pain, 1; depends on reaction of individual to narcotic; personally, no, pain caused is not proportionate to means taken, 1; no, not if I was in good health, 1; no, not in ordinary cases, 1; no, repeated injections of local anesthetic might be harmful to some patients, 1; in most cases, no, 1; should not be necessary, 1.

3. Conditional or Restrictive: 246

If necessary, 1; if tooth is sensitive to nerve, 65; only for prolonged drilling (bridgework) 14; only if very painful, 37; not necessary under usual conditions, 1; only if absolutely necessary, 1; not unless pain warrants, 10; not for small cavities, 11; if tooth is badly infected, yes, 8; if it does not impair the general health, 1; depends on the extent of the cavity, 32; depends on where it is and how painful, 5; yes, if the dentist understands his patient's condition, 1; unnecessary unless the cavity is very deep, 1; not unless nervous system is shot, 2; for some teeth, yes. If it were possible to run the drill so that it didn't "burn" this might not be necessary, 1; depends on care exercised by the dentist, 2; if the dentist advised it, 7; a good deal depends on the dentist's technique, 1; yes, if it will have no serious after-effects, 3; yes, for a deep cavity, 5; no, unless a tooth is especially sensitive, because the injection makes the gums sore, 1; yes, for children; gives them less fear of the dentist, 1; for comfort at the time being, yes, but when extraction not too difficult, no, 1; yes, if it could be done safely, 1; for fast work, it is a pleasant way, 1; yes, providing it would not interfere with proper filling of tooth, 1; I myself do not care for the injection, nor the effect, but it many times enables the dentist to work quicker and more efficiently in a very sore area, 1; not if the after-effects would be more severe than the pain, 1; people who can't stand drilling should have a local anesthetic, 1; not for just the ordinary drilling, 1; yes, if I went to a good dentist, 2; only in the event of work under the gums, 1; only as a last resort, 1; sometimes, 4; yes, but it is not practical in some cases, 1; no, not if I could possibly get by without one, 1; no, unless more painful than any previously done, 2; only in very painful cases, but I would not trust this to be done by the average dentist, 1; in some cases, yes; generally, no, 1; yes, if the injection did not have such a disagreeable numbing effect, 1; not if I can stand the treatment without one, 1; yes, if there was no after-swelling and it did not make any difference to the dentist, 1; yes, if condition of gums permits, 1; yes, if application would not affect too great an area, 1; yes, provided the nerve is not completely blocked, 1; yes, if administered correctly 1; no, unless it is an aid to the Dr. for a difficult job, 1; not unless the cavity is close to the gums, 1; it would help a person who fears having their teeth worked on, 1; if it would do away with the pain that exists subconsciously, 1; yes if I could be assured that the response to pain was not needed as an indicator to the operator, 1; if it were the best thing and no danger of drilling too close to the nerve without warning, 1.

4. Indefinite or Uncertain: 22

Do not know, 7; no answer, 10; sometimes, but one is as bad as the other, 1; not sure, 2; could not say; do not know effects of such an injection, 1; when properly administered a local anesthetic is harmless yet helpful in the drilling of pain, 1.

5. Indifferent: 17

It wouldn't matter, 3; not necessarily, 9; it wouldn't bother me but it would some people, 1; I wouldn't ask for it, but if the dentist suggested it, I would agree, 1; I haven't needed it so far, 1; it would be easier for a dentist to work on his patient, 1; not necessarily, but not a bad idea, 1.

6. Skeptical: 11

Understand it isn't good for the tooth, 1; doubt that it would help much, 1; yes, but perhaps it would result in too deep drilling, 1; it might stop the pain but I don't think it is safe always, 1; yes, yes, yes, but I think it would insure better work if the dentist were to know where there is sensitiveness, 1; have never experienced any drilling painful enough to necessitate a local anesthetic, 2; it would be a wonderful relief, but I do not have it. I feel that it is not best, 1; the less one has to take anesthetic, the better because they are somewhat of a dope, 1; I would like it, but realize that work can be done more efficiently without it, 1; it would be pleasant, if there is no harm in so doing, 1.

7. Prefers General or Topical Anesthesia: 10

Would like a general, 3; I would like something to quiet my nerves, 1; no, I prefer medicine sealed into the tooth 3 or 4 days prior to filling, 1; I prefer some sort of gas, 1; no, being highly nervous and having sensitive teeth, I take gas, 1; a topical anesthetic is better than a local, 1; I think if there was any way of freezing or numbing the pain it would be better, 1; no, I prefer a general anesthetic, 1.

8. Question Misinterpreted: 4

Either, 1; I prefer a local anesthetic because I cannot bear the effect of an injection, 1; I believe an injection is sufficient to deaden the pain, 1; only if very painful, I would rather have a "deadening," 1.

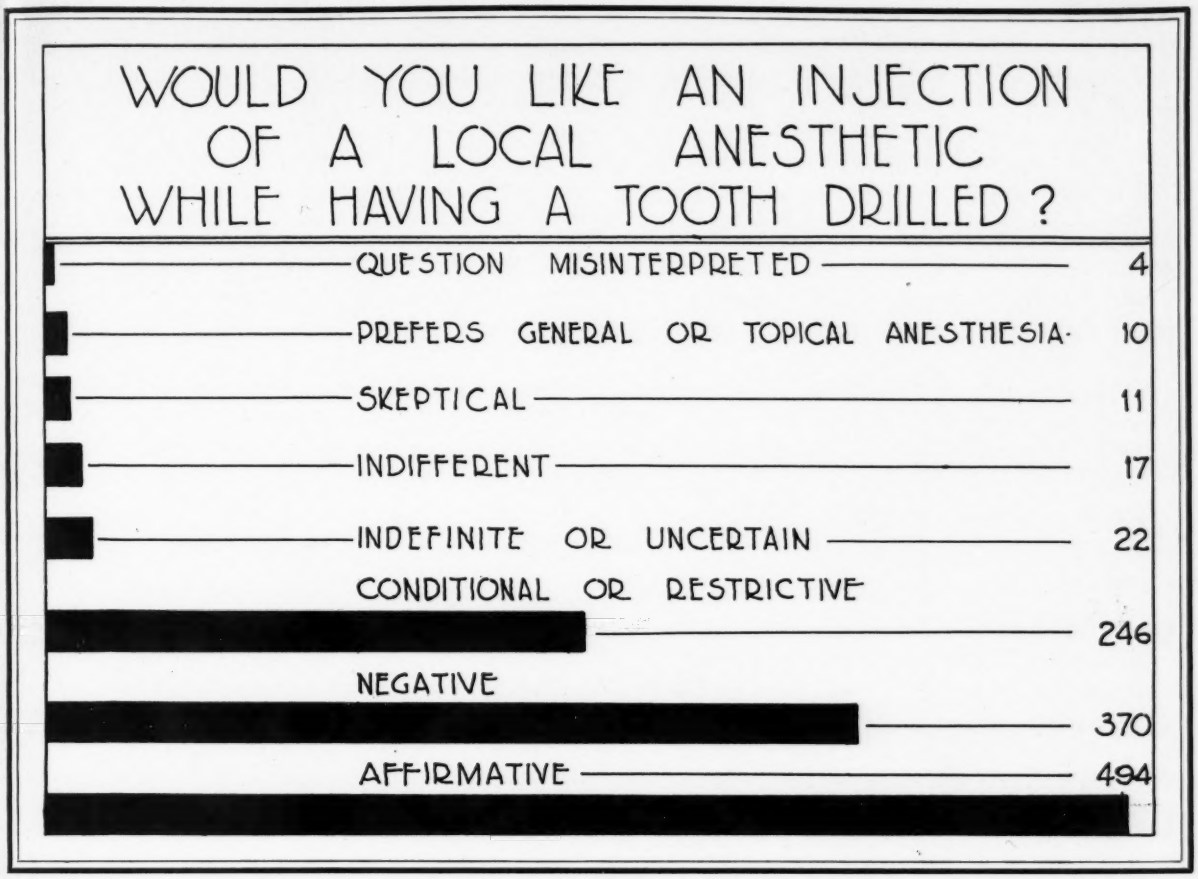


CHART 4

caries; otherwise they may be misled into believing that a pint of orange juice a day or a bottle of cod liver oil a week will make them immune to caries.

Dental caries is a complex phenomenon which cannot be attacked except by the expert skill of the dentist. The dentist does now and probably always will play the major rôle in the prevention and treatment of dental disease.

4. *Would You Like an Injection of a Local Anesthetic While Having a Tooth Drilled?*—The use of a local anesthetic for operative dentistry is widely accepted by patients and practiced by dentists. A gratifying element in the response is the frequent repetition by patients that the administration of a local anesthetic should be left to the judgment and discretion of the operator. In other words, an anesthetic is not something that the patient can order when he steps into the dental office. The patient's willingness to leave the question of an anesthetic to the dentist is an excellent example of patient respect for professional judgment and opinion.

Although many of these questionnaires were prepared at the time the Hartman solution was being acclaimed, less than ten patients indicated their belief in a topical or surface application, and not one mentioned the Hartman solution by name. Despite the fact that the announcement of the Hartman solution was the most circulated dental story in history in which all the modern facilities and mechanisms of publicity were employed, not one patient associated the publicity story with the dental experience in replying. This would appear to refute the alleged power of publicity in educating the public and seems to indicate that patients do receive most of their information in the dental office.

5. *What Is Your Understanding About Pyorrhea; in Other Words, What Do You Think It Is?*—The response to this question is a reflection of the lack of information about pyorrhea on the part of the profession itself. Beyond a vague recognition that pyorrhea is a disease of the supporting tissues of the teeth, most patients have no specific information concerning its etiology or its prognosis or its treatment. If they have experienced the disease, they know some of the consequences, but that is all. People seem to fear pyorrhea as a grave and almost incurable malady.

Of the 1200 patients only nine showed a reaction to this question which might have been conditioned

(*Continued on page* 78)

Chart 5 and Table 5 appear on the following three pages

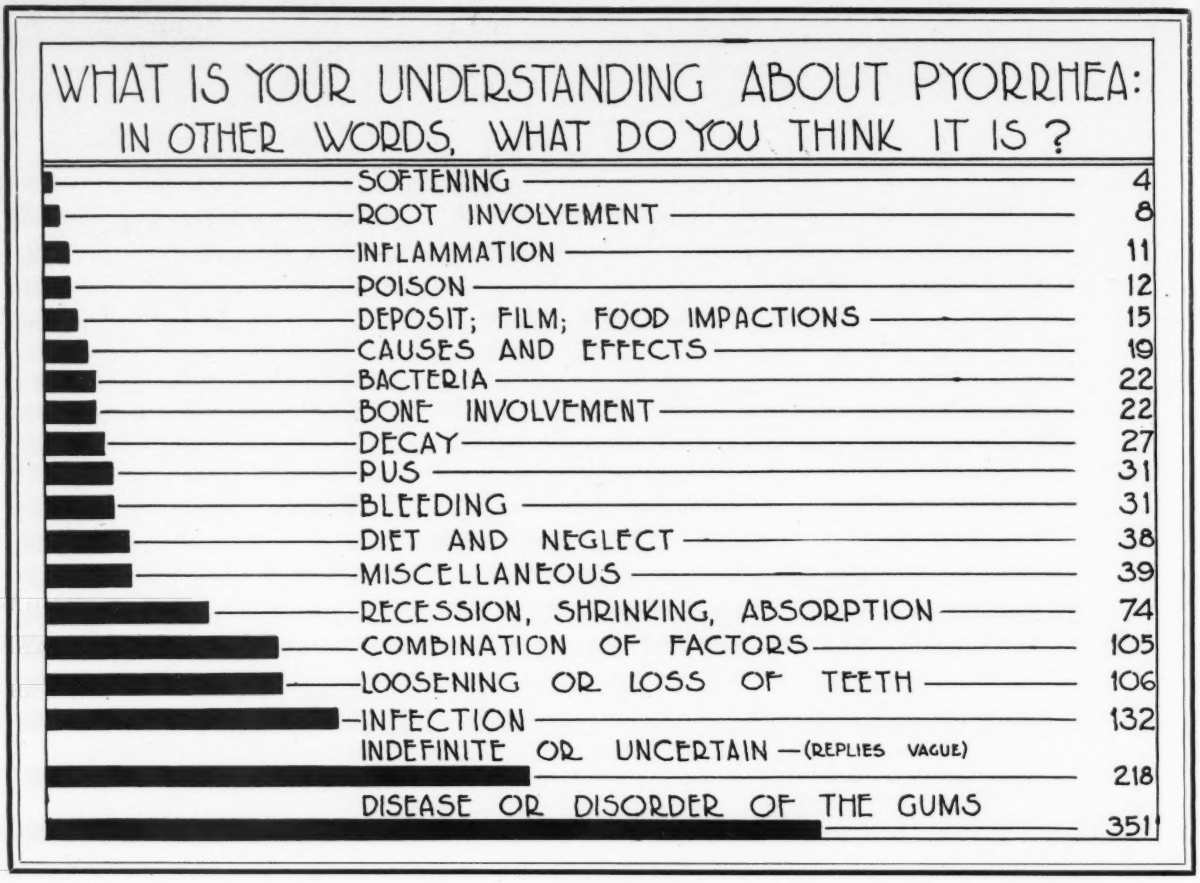


CHART 5

TABLE 5—WHAT IS YOUR UNDERSTANDING OF PYORRHEA: IN OTHER WORDS, WHAT DO YOU THINK IT IS?

ORIGINAL CLASSIFICATION: 329 **TOTAL REPLIES: 1265**

1. **Disease or Disorder of the Gums: 351**
   Disease of the gums, 268; sick gums, 2; deterioration of gums, 26; abscess of the gums, 2; chronic disease of the gums, 2; the gums are not functioning the way they should, 2; unhealthy condition of gums, 4; decaying of the gums, 5; soft gums that have not been taken care of properly, 1; soreness of the gums, 2; disease of the gums; soft and bleed easily, 6; disease of the gums, proper cleaning helps, but nothing entirely cures, 1; it is bad gums; it isn't the teeth, 1; gum disease caused by improper care of teeth, 1; gums which have become flabby due to soft foods, 1; tender gums, 1; lack of circulation through gums; sluggish gums, 2; diseased condition of gums eventually affecting teeth, 1; a wasting and unsightly disease of the gums, 1; disease of gums caused by lack of cleaning and massaging, 1; lack of circulation in the gums, 1; gums become soft and abscessed, 1; a gum disease caused by dead or decayed teeth, 1; disease of gums that affects health if not attended to promptly, 1; a condition of the gums, 3; soft gums, 8; a disease of the gums that is almost incurable, 1; lack of vitality in gums, 1; gum disease caused by improper gum exercise, 1; diseased bleeding gums, signifying presence of abscesses or decay, 1; abnormal condition of the gums, 1; pyorrhea is a disease of the gums caused by acids and not taking care of the teeth, 1.

2. **Indefinite or Uncertain: 218**
   Never had it, 1; disease in area surrounding teeth, 4; disease on the teeth, 3; do not know, 76; no answer, 73; disease affecting all the teeth, 4; serious (bad), 8; a bad disorder in teeth, 1; eats down to the roots, 1; immediate care advised, 2; bad for health, 1; disease, 3; disease of both teeth and gums, 6; makes appearance of mouth ugly and gums sore, 1; detrimental to teeth, do not know cause, 1; a disease that weakens the teeth, 1; a disease in the teeth affecting the whole body, 1; serious—requires constant care and attention, 1; a disease that can't be cured, 1; nothing, 1; not a disease but a condition, 1; I think it is awful and feel sorry for the fellow who has it, 1; no layman should be asked the question—it took three dentists once to tell me I didn't have it, 1; a disease I dread but do not know the cause, 1; a dangerous disease, 1; I suppose it is an infection of the gums due to some nutrition fault; do dentists know? 1; Pyorrhea is a weak condition of teeth and gums, 1; no clear understanding—a mouth disease probably caused by acidity or lack of some mineral in the system and encouraged by lack of care, 1; I do not know, but I think it is just something to ease pain for the time being, 1; it is a condition and not a disease, 2; it can ruin teeth if not checked in time, 1; a very destructive disease that should be taken care of in early stage, 1; a mouth disease, 1; a very dangerous disease and should be treated as soon as possible, 1; to my opinion, the worst disease in teeth, 1; I think it's the most terrible thing to neglect. One should preserve their teeth by treating gums, 1; I know the effects but not the cause, 1; I think it is Hell! 1; a disease of the mouth which I have had no experience with, 1; a condition of the gums that is

needless if common sense precautions are used intelligently, 1; it is something that can ruin the whole body, 1; it is dangerous to health, 1; it is dangerous and annoying, 1; a tooth disease needing good care to do away with it, 1; I know very little about it, 1; infection of the gums but I'm rather vague in my mind about this, 1; a bad condition of the mouth and gums and teeth, 1.

3. Infection: 132

Gum infection, 105; infection, 4; contagious infection, 2; root infection, 3; food impactions infecting the gums, 3; localized infection in the teeth, 1; gum infection caused by bad teeth, 1; infection in jawbone under the gums, 1; an infection that causes a lot of trouble, 1; a disease of the gums caused by infected teeth, 1; infection of the gum margins around the teeth, 3; infection in the bone surrounding the tooth, 1; a serious infection in the body which destroys teeth, 1; an infection caused from lack of brushing, 1; a very active mouth infection, 1; pyorrhea is an infection of the teeth, 1; an infectious disease, 1; a gum infection caused by improper diet and decayed teeth, 1.

4. Loosening or Loss of Teeth: 106

Loosening of teeth, 57; loss of teeth due to loosening of the gums, 1; loosening of gums from the teeth, 11; disease in the gums that loosen the teeth, 26; you don't take good enough care of your teeth and they fall out, 1; a disease of the gums which loosens them from the teeth, 3; loosening of the gums, 1; pyorrhea is when the teeth become loose but won't fall out without pulling, 1; it is a disease which will eventually compel you to have all your teeth pulled out, 1; a condition of the jaws, but not a disease, due to systemic unbalance, which is evidenced by the loosening of the teeth and the decay of the gum tissue between the teeth, 1; it loosens teeth even while sound, 1; some disease which causes all the teeth to fall out, 1; disease causing loss of all teeth unless promptly attended to, 1.

5. Combination of Factors: 105

Gum infection and consequent loosening of teeth, 7; softening of gums and loosening of teeth by a germ, 37; loosening of teeth due to tartar formation on teeth, 5; condition of tooth socket; improper biting of teeth, 1; weakened and diseased gums caused by accumulation of tartar, etc., 1; bacterial decay of and loosening of the teeth, 1; soft, flabby infected gums caused by poor circulation, lack of minerals in diet and lack of cleanliness, 2; an infection below the gum line which causes the teeth to become loose, 1; streptococci infection causing pus pockets and subsequent decay, 1; systemic poisoning causing loosening of teeth—extraction is then necessary, 1; a disease of the gums caused by poor assimilation of food, breaks down and destroys the bone and tissues and gum structures and causes the teeth to become loose, 1; spongy condition of gums causing recession and pus—sometimes caused by diseased sinus, 1; softening of gums and teeth, which if not taken care of in time will loosen and fall out, 1; an infection of the gums which has for its focus the roots of the teeth causing pus to collect around the roots, the teeth to become loose and the gums to bleed, 1; inflammation of the gum extending down into the covering of the bone. Pyorrhea also has a discharge of pus, 1; soreness and bleeding of the gums—loss of teeth if neglected, 1; condition of bone that causes inflammation of gums, 1; bleeding condition of gums and breaking down of bone structure in jaw and shrinking of gums which leaves roots exposed, 1; inflammation of the gums caused by a germ, 1; abnormal condition of gums and jawbone, 1; bone infection caused by irregularity of pressure from teeth that don't strike together properly, 1; inflammatory and contagious disease and disintegration of gums and jawbone, 1; poor circulation—general health—bite not right—diseased condition of gums—lack of oxygen, 1; bleeding gums caused by tartar and erosion, 1; loosening of teeth occasioned by recession of gums which is caused to some extent by poor circulation in the gums, 1; recession of the gums caused by infection, 2; teeth recede from the gums; caused by incorrect brushing, 1; a disease of the gums that eventually causes the teeth to rot, 1; it is a dreadful disease—the gums become spongy and soft and the whole mouth loses its shape, 1; pus pockets and recession of gums caused by too much or too little pressure on teeth, 1; loosening and decaying of teeth beyond repair, 1; gum infection and pus pockets caused by food impactions, 2; pyorrhea causes the teeth to shrink from the gums and fall out; 1; the gums recede from the teeth leaving a pocket that fills with pus and the gums bleed easily, 1; gums shrink from the teeth and they become loosened, 1; pus pockets causing loosening of the teeth, 1; pyorrhea means receding gums that create "pus" pockets, 1; a gum disease causing bleeding and finally it loosens teeth, 3; diseased tissues around decayed teeth, 1; gum and bone trouble, 1; gums shrink; bone cells are destroyed—teeth work loose—that's the end, 1; flabby bleeding gums and eventual decay of the teeth, 1; an infection that deposits a scale on lower part of teeth, 1; I think external pyorrhea is a recession of the gums (because of some infection in the gum). Internal pyorrhea is also an infection though the setup through undue pressure or some other abnormal condition around root of tooth, 1; absorption of the gum tissue due to infection, 1; the teeth have a coating of film on them. Bleeding? 1; an infection of the gums which shows itself in softness, swelling, whiteness of the gums and unusual bleeding of same, 1; softening of gums—loosening of teeth—consequent decay, 1; caused by various conditions—irregular arch—gingivitis—trench mouth, 1; a disease caused by pus forming bacteria. Pyorrhea attacks tissue surrounding the root of a tooth, 1; infection in the gums, caused by deposits collecting underneath gum, around upper edge of teeth, 1; a deposit on tooth surface that pushes back the gums and causes disease of same, 1; softening of gums caused by chronic irritation and infection at root of tooth, 1; pyorrhea means diseased gums that shrink from the teeth, bleed and the infection goes through the system, 1.

6. Recession, Shrinking, Absorption: 74

Bone and gum absorption, 3; shrinking of gums, 58; softening and shrinking of the gums, 5; the gums shrink from the disease and leave the vulnerable parts of the teeth exposed, 2; gums recede from teeth; teeth fall out even though perfect, 1; drying up of the gums, 1; recession of gums often caused by superacidity, 1; a disease of the alveolar process with recession of the gums, 1; recession of the alveolar process, 1; receding of the gums which have become diseased due to some lack in the system, 1.

7. Miscellaneous: 39

General aching of teeth due to one bad tooth, 1; a treatment, 1; disease caused by not cleaning the teeth, 7; uncleanliness; absence of brushing, 1; malformation of the mouth, 1; a break down of the tissues, 1; an ulcer condition, 1; irritation of tissues surrounding teeth; either mechanical or traumatic, 1; scaling off outside covering of teeth, 1; a serious disease of the mouth affecting the gums and exposing the teeth to new paths of decay, 1; a kin to trench mouth, 2; bad breath, 1; a disease which starts around the cervical regions of teeth and causes alveolar atrophy, 1; teeth not properly cleaned, 1; a condition of the blood, 1; breaking down of tissues due to lack of necessary elements, 1; the result of unsanitary oral conditions, 1; bone infection caused by irregularity of pressure from teeth that don't strike together properly, 1; lack of proper functioning, 1; pyorrhea is a broad term covering gum and tooth abscess taking place under the surface, 1; a disease which attacks the enamel of the teeth, 1; acidity from food remaining near the gums, 1; a systemic disease that manifests itself in the gums, 1; "Pink toothbrush," 4; something which is not as widespread as alarming advertisements claim, 1; a commercial god-send; a germ disease of the gums which causes the decay (?) of the tooth, 1; something four out of five have—a bleeding condition at the base of the teeth which ultimately loosens the teeth themselves, 1; a disease of the mouth including bad breath (halitosis), 1; people are scared by high-pressure advertising. Pyorrhea to me means an improper condition of the gums, 1.

8. Diet and Neglect: 38

Due to neglect of teeth, 17; lack of care, 2; inattention to teeth in youth, 1; improper dieting and care, 2; pyorrhea is unnecessary; caused by lack of proper care of teeth, 1; lack of proper food, 1; faulty eating—too much acidity and improper care of teeth, 1; a diseased condition of gums caused by poor circulation, lack of minerals in diet, and lack of cleanliness, 2; a run down condition of gums and teeth caused by lack of care and cleaning, 1; a condition brought about largely by improper tooth hygiene, thereby causing decayed tissues, bone, etc., 1; the result of neglect in choice of food—the half-way point for false teeth, 1; a disease caused by lack of mouth hygiene and good solid foods, 1; lack of care and lack of correct elements in food is called

pyorrhea, 1; neglected dentistry, 1; pyorrhea comes from eating soft foods, 1; when we don't eat enough bone builder, 1; a condition which one is unaware of—lack of visits to dentist, 1; a bad condition of gums and teeth due to neglect, 1; I think it is a condition that clearly can be avoided, I think there is generally no excuse for letting the gums get in such shape, 1.

9. Bleeding: 31

Bleeding gums, 27; bleeding while brushing, 1; bleeding of the teeth, 2; pyorrhea is bleeding of gums due to neglected care of teeth, 1.

10. Pus: 31

Pus pockets near teeth, 11; a copious discharge of pus, 1; pus gathering near roots, 6; pus under teeth from bad health, 1; pus formation, 3; a pus condition causing gums to become soft and bleed at least contact with food, 2; a purulent discharge causing gums to recede from teeth and then decay, 1; it is a pus formation between the teeth and gums, 1; diseased pussy condition of the underlying structures of the teeth, 1; pus which causes toxin to travel through system, 1; a copious discharge of pus and purulent inflammation of the dental periosteum, 1; pus in the teeth, 1; pus formation in roots; I think it is terrible, 1.

11. Decay: 27

Tooth decay, 11; decay at the root of the teeth, in the gums, 4; decay of roots of teeth, 2; disease that rots the teeth, 3; decay under inner surface of teeth and gums, 1; the roots of the teeth rot out, 1; decay around the meeting place of the gums and teeth that if not watched would necessitate "false teeth," 1; teeth become too rotten—stay in too long, 1; decaying of the base of the teeth, 1; decayed enamel or surface of the teeth similar to the scarred tissues of the flesh, 1; no one knows what causes pyorrhea but it is a slow rotting away of the teeth that is hard to check, 1.

12. Bone Involvement: 22

Bone destruction, 8; bone around teeth absorbs and teeth fall out, 3; tears down tissues and bones, 1; decay of bones that hold teeth, 1; pyorrhea is the rotting of the bone, 1; disease of the bone, 1; a disease of the jawbone, 1; breaking down of bone around teeth, caused by too much stress on some teeth and lack of stress on others; it is not contagious and does not spread, 1; pyorrhea is eating away of bone tissue of the gums caused by food impactions from improper brushing, 1; molding of the bones under the gums, 1; faulty bone structure at the gum line due to unremoved tartar, 1; disease of gums and bones supporting teeth, 2.

13. Bacteria: 22

Tooth destruction by bacteria, 1; bacterial destruction of the tissues surrounding the teeth, 3; a germ in the mouth or teeth, 3; a germ, 1; bacterial decay of jawbone and tissues, 2; a germ that works at the base of the tooth, 2; disease of the gums caused by bacteria, 1; a mouth disease caused from a bacterial growth, 1; a contagious germ disease of the buccal cavity, 1; a germ that enters the gum and tissues caused by abscessed teeth and neglect, 1; a germ getting at the bottom of the tooth, 1; a germ condition influenced by the blood; the presence of bacteria within the gums, 1; it is thought to be among the most minute of parasites, 1; pyorrhea is a germ that destroys tissue, 1; a germ condition, 1; a germ that eats enamel of teeth and is hard to check, 1.

14. Causes and Effects: 19

Caused by irregular teeth and lack of gum stimulation, 5; bad on the general health, 2; causes bad breath, 1; due to non-use of teeth, 1; result of systemic disorder, 2; can infect blood stream, 2; gum ailment which should be taken care of—causes loss of teeth and is catching from drinking glasses, etc., 1; disease of the mouth coming from a cold, 1; it comes from diseased gums, 1; pyorrhea is partly due to an acid condition in the mouth, 1; caused from diseased teeth, 1; pyorrhea is hard to cure, detrimental to health, and causes bad breath, 1.

15. Deposit: Film: Food Impactions: 15

Caused by tartar formation, 2; when you eat and leave things in between your teeth, 1; a film formed under the gums at the roots of teeth, 1; white shelly substance that forms on teeth near gums; if not cleaned off will push gums away from teeth and loosen them, 1; it comes from an acid secretion in the mouth, 1; gum disease caused by tartar retaining food around the teeth, 1; pyorrhea is a substance that gathers on the teeth, 1; a deposit at the base of the teeth, 1; your mouth secretions aren't proportioned right and causing tartar under gums which few dentists get to until too late to save teeth, 1; substance around the gums, 1; collection of tartar at roots of teeth, 1; scale forming under gums, 1; pyorrhea is a coating on the teeth, 1; space forms between teeth and gums fill with decayed food and cause a disease of the gums, 1.

16 Poison: 12

Just a poison when you have rotten teeth, 1; absolute poison, 1; poison at teeth roots or in the gums, 2; toxic condition of gums due to improper care, 1; a disease which attacks the gums and poisons the whole system even if the teeth appear sound, 1; systemic poisoning causing loosening of teeth—extraction is then necessary, 1; a disease caused by poison from bad teeth in the system, 1; a condition caused by bad teeth—thus effecting poisoned gums, 1; poison, 1; a poisoning caused by decayed teeth, 1; pyorrhea is the forming of poison at the root of the teeth, 1.

17. Inflammation: 11

Inflammation of gums, 8; inflammation of peridental membrane, 1; an inflammation of the lining membrane of the teeth, 1; inflammation of the periosteum, 1.

18. Root Involvement: 8

Disease of the roots, 2; the roots of the teeth rot out, 1; disease of teeth roots, 2; a breaking down of the root system of the teeth, 1; disease that goes to the end of the root, 1; a disease at the roots which causes bleeding gums and may affect the general health, 1.

19. Softening: 4

Softening of the teeth, 1; softening of the teeth due to a physical condition, 1; soft teeth and gums; not firm in other words, 1; a softening of the teeth, 1.

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by advertising influences. This seems highly important. In view of the extensive campaigns and thousands of dollars that have been spent by dentifrice manufacturers on this subject, the inference may once again be made that general advertising or so-called dental health education is not so potent as is commonly supposed.

(End of Second Installment)

The Editor's Page

AS TECHNIQUES DEVELOP in dentistry, as more precise and scientific methods are discovered, an improvement in all aspects of dental practice should follow. The furnishings and equipments in offices should reflect the development. Business procedures should be more business-like. Professional skill should be accompanied by business efficiency. The keeping of records and books should be as careful and as thorough as the operative procedure performed.

One expression of a radical change in dental practice is the increasing emphasis laid on a thorough dental examination. The day of the quick exploration with a mirror and an explorer has given way to the complete examination that includes the full-mouth roentgenologic study, the use of transillumination and pulp-testing, the making of study models, and careful history taking. With all these improvements in examination there had not been developed a satisfactory and simple chart upon which to record mouth conditions. With this observation in mind, a study was made of all available examination forms. The number of complicated and obsolete forms used to chart dental conditions was inexcusable. Most of the charts were poor simply because they did not show teeth in the form and arrangement that looked like the human dentition. Frequently the dental anatomy was distorted and there were few examples that showed any consideration of normal arch form.

This study of records commonly used made it seem necessary to define what a satisfactory examination chart should include: It should be simple; adaptable for use with any bookkeeping or record system; anatomically accurate; and should emphasize the mouth as a unit. All surfaces of the teeth should be shown in normal contour rather than as flat planes or as mere outlines. It should show the normal contrasting mouth conditions with white teeth against a dark background. Finally, the satisfactory chart should be designed so that the dentist may use it in treatment-planning, which means that it should be so simple that the patient can understand his own mouth condition as recorded by the dentist. The obvious advantage of a chart that will aid the patient in visualizing his dental conditions as presented upon examination and as they will appear after treatment will be quickly apparent to the dentist who is interested in improving his presentation of dentistry to the patient.

After we laid down the specifications for such a chart the actual preparation was begun. Black's DENTAL ANATOMY was used as a guide to establish the average measurements of the teeth: length over-all, of crown, of root; mesio-distal diameter of crown, of neck; labio-lingual or bucco-lingual diameter. Arch forms and relationships were studied from casts and from standard textbooks on orthodontia. The final drawing was made to represent an adult dentition without signs of occlusal or interproximal wear: an ideal dentition. Photostatic copies of the original drawing were made and submitted to recognized authorities on dental anatomy for their criticism. Essential corrections were then made on the drawing before the engraving was done. The result of these preparations, the chart in actual size, is published in this issue on page 94, together with the smaller reproductions which show diagrams of typical mouth conditions before and after treatment.

Reproductions of this chart will be supplied in pads of fifty with perforations to fit standard loose-leaf notebooks. These charts are not intended to replace present bookkeeping systems. They are primarily examination forms. We would suggest the following procedure in the use of these charts: Indicate with colored pencils or ink existing restorations; "black" out missing teeth with a soft lead pencil; mark with a hard pencil untreated caries. After the roentgenograms have been studied, mark the condition of the supporting bone, particularly the height of the septal crests. A red pencil may be used to indicate inflammation of the soft tissues and root-end disease.

After the examination has been made it is suggested that another chart be used to plan treatment. Mark this chart to show how the mouth will appear after restoration. It is not suggested that a copy of the examination record or of the treatment plan be given the patient. The patient should, however, be shown the charts to help him understand his condition and to aid in his visualization of the scope of the treatment.

Osteomyelitis: Sequestrum Formation At Mandibular Border

JEROME M. SCHWEITZER, D.D.S., New York

Etiology

CAMERON[1] CLASSIFIES osteomyelitis of the jaws as acute or chronic, and localized or diffused.

Acute infective osteomyelitis is an inflammation of the bone marrow due to pyogenic organisms. The hematogenous type, or that type which originates in the blood stream, may develop immediately after an acute infectious disease. The acute infectious diseases that sometimes are followed by osteomyelitis are scarlet fever, malaria, influenza, measles, pneumonia, diphtheria, syphilis, typhoid fever, and chicken pox. It is thought that these diseases tend to lower the resistance of the bone marrow, and that any operative procedure following them, such as extraction or root amputation, are dangerous. Osteomyelitis may follow as a complication of mercurial stomatitis, noma, or scurvy. It may occur as a consequence of pericoronitis from an infected third molar pocket, either from failure to extract the tooth when there were no acute local symptoms, or from extracting too soon when the symptoms were acute.

Osteomyelitis may gain entrance by way of the maxillary sinus. Some authors[2] report extensive instrumentation, a tear in the tissue, and also the use of hydrogen dioxide in deep-seated pockets as causes. Osteomyelitis may result from chemical poisoning or from extremes of temperatures. It may occur from the curettement of painful sockets. It may result from a fracture, whether simple or compound.

The hematogenous type of osteomyelitis is rare. The usual cause of acute, general, or localized osteomyelitis is an infection from a diseased tooth; an attempt to treat the pulp of a diseased tooth; or the extraction of a diseased tooth; with the further inflammation of the periosteum, then of the bone proper, and finally of the bone marrow. As Theodore Blum[3] states, first a periostitis, then an osteitis, and then osteomyelitis.

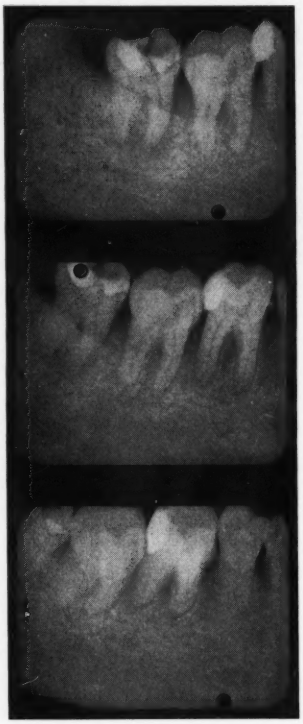

Fig. 1—May 9, 1935. Lower right first and third molars with apical abscesses.

Mead,[4] in defining localized osteomyelitis, states that in many cases, there are no symptoms present, and the roentgenogram rarely discloses the condition. He here refers to buried root apexes, which, on removal, show a honeycombed bone condition. The area may be readily curetted, as it is soft and spongy.

Pathology

The organisms responsible for osteomyelitis are briefly as follows: Pyogenic micro-organisms; namely, staphylococcus from 80 to 85 per cent; streptococcus from 10 to 15 per cent; and other pyogenic organisms, 5 per cent. In the hematogenous osteomyelitis, the typhoid bacillus, *B. Influenza,* and rarely the gonococcus is found. There are some doubts as to the pneumococcus being a cause.

In streptococcus infections, there is widespread involvement of the bone; whereas, in staphylococcus infections, the osteomyelitis may be limited to a portion of the bone. The infection is due to the *Staphylococcus aureus* or the *Staphylococcus albus.* There may be a mixed infection of streptococcus, staphylococcus, and bacillus. In young patients, mixed infections are dangerous.

The *Staphylococcus pyogenes-aureus* causes many bone abscesses, necrosis, and sequestrum formations. Rosenbach first demonstrated[5] the presence of the *Staphylococcus albus* in the pus in osteomyelitis. The *S. aureus* and the *S. albus* have the same degree of severity. The streptococcus is next in number. The streptococcus shows severe general symptoms. The suppurative process is more extensive. The pus is thinner and brighter green than that of the staphylococcus. The cortical layer of bone is usually affected.

Following extractions after pneumonia, the pneumococci may be found. They behave very much like the streptococci. In pericoronitis from unerupted teeth, the osteomyelitis is complicated by the presence of spirochetes and the fusiform bacilli. As a consequence of typhoid fever, the typhoid bacillus may be the sole cause. This organism does

[1]Cameron, J. R.: Osteomyelitis of the Mandible, New York J. D. 1:444 (November) 1931.
[2]Blair, V. P. and Brown, J. B.: Personal Observations on the Course and Treatment of Simple Osteomyelitis of the Jaws, Clin. North America, 15:52 (October) 1925.
[3]Blum, Theodore: Osteomyelitis of the Mandible and Maxilla, J. A. D. A. 11:802 (September) 1924.
[4]Mead, S. V.: Diagnosis and Treatment of Chronic Osteomyelitis of the Mandible and Maxilla, J. A. D. A. 15:2272 (December) 1928.
[5]Hauenstein, Karl: Concerning Osteomyelitis of the Jaws and Its Connection with the Dental System, Internat. J. Ortho. & Oral Surg. 15:359 (April) 1929.

Fig. 2—(Upper left) May 9, 1935. Lateral plate of the right mandible showing the infected first and third molars. Note intact lower border of mandible.

Fig. 3—(Upper right) June 1, 1935. Lateral plate of right side of mandible after removal of first and third molars. Sequestrum may be seen forming on the lower border.

Fig. 4—(Lower left) June 3, 1935. Lateral plate of right side of mandible. The sequestrum here is a trifle more apparent.

Fig. 5—(Lower right) August 15, 1935. Lateral plate of the mandible showing notch in lower border where sequestrum has been removed.

not cause a severe amount of bone destruction.

Mixed infections from general diseases cause more osteomyelitis than specific infections. Mixed infections of streptococcus and staphylococcus

Fig. 6—Removed sequestrum.

usually cause a severe clinical picture.

Symptoms

There is wide variation of this disease, according to localization, limitation, and above all, the intensity of the infection and the resistance of the patient.

Acute Diffuse Suppurative Osteomyelitis—The disease, following an extraction, is ushered in by a chill, and the constitutional symptoms are positive. The wound suppurates, and the odor is foul. There is a uniform swelling on the affected side of the mandible or maxilla, with great tenderness, and at times, a violent, boring pain that is felt up to the ear. The soft parts discolor, swell, and become distended, with a glossy and edematous appearance, because of the presence of pus. The cancellated structure becomes full of pus under pressure, with pus discharging from the necks of teeth. Subperiosteal abscesses may form in the mandible, which may find exit internally or point externally. In palpating, there is no fluctuation, but rather a boggy feeling. Roentgenograms do not disclose anything at this time. The lymph glands become involved, enlarged, and sensitive to palpation.

An infection of the mandibular incisors travels to the submental regions; whereas the posterior teeth affect the submaxillary lymph glands. Pus developing in the bone pierces the cortical plate. In the maxilla, it may travel into the nose, palate, or even sinus, as the root tips are near. If the diseased area is near the muscles of mastication, trismus will be present.

Chronic Osteomyelitis—Whereas the acute form is characterized by chills, fever, and general disability, and is attended by suppuration with rapid destruction, in the chronic form these conditions may be entirely absent. In the chronic form Mead describes, all the alarming symptoms are absent; but this refers mostly to cases of embedded roots.

Classification of Localized Chronic Osteomyelitis—For purposes of differentiation, I would classify localized chronic osteomyelitis in four subdivisions:

1. Class 1 would refer to those buried roots with rarefaction present.

2. Class 2: The area involved is usually no longer than the socket of an extracted tooth, whether an incisor, bicuspid, or molar. I refer here to dry sockets, which develop after extractions, regardless of the cause of these dry sockets. As a rule, they follow the extraction of pulpless teeth. It is certain that dry sockets exhibit all the symptoms of an osteomyelitis, except that the remaining teeth remain firm, the swelling is not as severe, and the patient rarely has chills or fever. This condition terminates immediately on exfoliation of a portion to a whole tooth socket. It may run a course of from one to four weeks.

3. Class 3 under the subdivision of chronic localized osteomyelitis is that which develops from the extraction of a tooth when the sequestrum forms in another portion of the jaw.

Albert Davis[6] reported a case of osteomyelitis involving the lingual plate of the mandible. He states that the duration of the disease was six weeks. The infection was of low grade type, without marked symptoms, the amount of discharge was negligible, and little toxicity was present. The patient was ambulatory, and seemed to have a high degree of resistance to invading organisms. Again, why the organisms should select this particular site is difficult to say. Usually they are carried by the blood, and the blood supply is better elsewhere. The periosteum is unusually thick in this area, and should be highly resistant.

4. Class 4 of chronic localized osteomyelitis may be considered as that which arises from a fracture. Here, the teeth directly in line of a fracture may become loose, with symptoms closely resembling the acute diffuse type, but not so severe, and with only those teeth in line of fracture becoming involved, and usually no others. In this localized type of osteomyelitis due to a fracture, the cartilaginous union, which usually takes place in four weeks in the normal fracture, may be delayed from three months to one year. The roentgenograms usually disclose the bone in the line of fracture dissolving away, until there is sometimes space from one-fourth inch to 1 inch in length between the two bone fragments; there is a gradual filling in of this space first by a cartiligineous union, and then, solid bone. Doctor Reubin Seldin[7] presented an interesting case of a fracture which was complicated by an osteomyelitis, which is typical of class 4.

Treatment

All authorities agree that the best form of treatment is the conservative one.

1. Prompt and efficient drainage should be established; external incision is usually necessary.

2. Rubber tubes are often helpful in keeping open the drainage in external incision.

3. Internal incision will often be better, with no dressings at all. Some operators, however, believe in small iodoform drains.

4. Irrigation of the wound is necessary, and at frequent intervals.

5. It is generally considered wise not to extract any teeth during the acute stage of the disease, no matter how loose they may be. In the mouths of young patients, it is hardly ever advisable to extract any loose teeth at any stage of the disease, because more than likely, these teeth will tighten, and though apparently not vital, will, in the course of time, regain their vitality. This practice, of course, must be modified with older patients. In the case of

[6]Davis, A. D.: Osteomyelitis of the Jaws, J. A. D. A. 16:1384 (August) 1929.

[7]Seldin, Reubin: Fracture of Mandible Complicated with Osteomyelitis, Dental Digest, 40:414 (December) 1934.

originally pulpless and carious teeth, and those which had originally been pyorrheal, when the acute symptoms subside, these teeth may be extracted.

6. Some sequestration takes place during the latter part of the acute stage. The sequestrums should be removed as they form. Large sequestration does not take place before the third month, and no attempt should be made to remove any sequestrums until their separation from the bone. By that time, the involucrum will be sufficiently strong, so that the removal of the sequestrums is permissible. These are usually best removed under general anesthesia.

7. Most authorities are agreed that cold applications are indicated. I have always found cold applications beneficial. Heat always tends to spread the infection into regions not desired.

8. Curetting is highly undesirable. Several years ago, however, I had the privilege of assisting Doctor H. S. Dunning in curetting the mandible from molar to molar, in an old case of chronic osteomyelitis, which, subsequently responded well to the treatment. The suppuration stopped, and no further suppuration took place. But these cases are rare, and this treatment is not usual.

9. Localized chronic osteomyelitis may be treated outside of the hospital, but hospitalization is necessary in acute diffuse osteomyelitis.

10. Frequent roentgenograms should be taken in chronic diffuse osteomyelitis, as they will indicate the time when the sequestrum is ready to be removed.

11. When the patient begins to convalesce, he should be put on a high caloric diet.

12. Blood transfusions are sometimes beneficial.

13. Ultraviolet rays are sometimes helpful.[8]

14. The vitamins should be well distributed in the diet, and I believe that they should be given more in natural foods, rather than in concentrates. There should be an abundance of cod liver oil, milk, tomatoes, oranges, and lemons.

15. Calcium lactate may be given for calcium deficiency, and vitamin D is essential as a bone builder.

16. The patient should have plenty of rest, and provided with tonics. Sun baths should be administered whenever possible.

[8]Molt, F. F.: The Treatment of Acute Osteomyelitis of the Jaws, Read before Am. Soc. Oral Surg. & Exodon., Philadelphia, August 20, 1926.

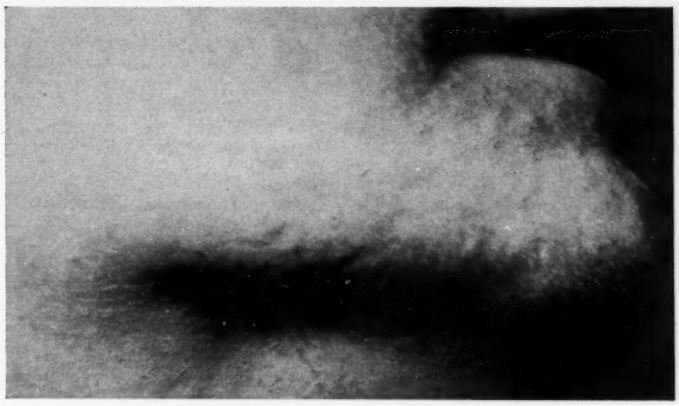

Fig. 7—Scar, healing after removal of sequestrum.

Complications

The complications which are apt to develop are as follows: (1) The involvement of the salivary glands; (2) metastases to other organs and bones; (3) pathologic fracture; (4) fistula tracts in old chronic cases; (5) ulcerative stomatitis; (6) peritonsillar and pharyngeal abscesses; (7) Ludwig's angina; and (8) cavernous sinus thrombosis.

Prognosis

Prognosis depends, as I have previously stated, on the virulence of the individual organism, and the resistance of the person as well as the site of attack. Few of these cases are fatal when properly treated. In my opinion the dentist should never undertake these cases himself, but always in consultation with a physician or surgeon. I further believe that in acute cases hospitalization is essential, and that the dentist should always be ready to seek the opinion of a medical consultant.

Report of Case

The patient was admitted to the hospital on April 29, 1935, because of pain in the bladder, alternate high fever and chills, and severe swelling of the joints of the hands, elbows, and knees.

History—About ten days prior to admission to the hospital the patient had had the lower right first and third molars treated. The lower jaw became swollen, the swelling extending to the neck. Her appetite was poor, and she suffered from lack of sleep, losing 8 pounds.

Roentgenographic Examination—Dental roentgenograms taken May 9, 1935 (Fig. 1) show the lower right first and third molars both with apical abscesses. The lateral plate (Fig. 2) taken of the jaw shows the lower plate of bone to be intact.

Urinalyses—Five different urinalyses taken from May 14 to June 11, 1935 showed profuse growth of gram-negative coliform bacilli.

Extractions—May 11, 1935 under general anesthesia, with apparently no trauma, the lower right first and third molars were extracted.

Course—The swelling subsided until June 1, 1935, when swelling in the third molar area, with some unhealthy granulation, made its appearance. There was a great deal of suppuration. The socket was curetted, drained, and irrigated. The first molar socket was apparently healing uneventfully.

At the same time, the patient was suffering systemically from the conditions responsible for her admission to the hospital.

A lateral plate of the jaw taken June 1, 1935 (Fig. 3) showed a distinct separation of the lower border of the periosteum about 2.5 cm. long. A lateral plate taken June 3, 1935 (Fig. 4) showed a more marked separation.

Incision and Drainage—The suppuration from the socket continued unabated until June 12, 1935 when an incision was made under general anesthesia from the third molar socket backward, and a large iodoform drain was inserted.

Course—From June 12 to June 21, 1935, the swelling and suppuration almost disappeared. The dressing was omitted, and the patient's condition was improved.

The temperature at all times was be-

tween 98 and 100°F., the pulse between 70 and 100, and the respiration 20.

June 27, 1935, an external swelling appeared toward the lower border of the mandible in the region of the first molar. An incision was made under nitrous oxide-oxygen anesthesia, and a rubber tube inserted. Yellowish pus was evacuated.

The patient again complained of her general health. A laterial plate taken that day showed separation of the sequestrum from the body of the mandible.

Removal of Sequestrum—During the entire month of July external drainage was continued and on July 30, under general anesthesia, an external incision was made and the sequestrum removed (Figs. 5 and 6).

After the romoval of the sequestrum the patient had an uneventful recovery and the bodily symptoms subsided.

A photograph taken September 12, 1935 (Fig. 7) shows the scar healing, and it may be added that the scar is not visible unless the patient's head is tilted back. No plastic repair is necessary as this scar, which is now hard becomes softer and less indented.

A SIMPLIFIED INLAY TECHNIQUE

(*Continued from page* 67)

vibrate until the wax pattern is covered at least 2 mm. on the upper end. (Fig. 7). Be certain that no air bubbles communicate from chamber to the outside. With a heated knife blade, part the wax cylinder perpendicularly to allow unrestricted expansion in every direction.

It should be noted that the wax pattern invested in a small mound of investment is entirely outside of the ring; therefore, the pattern and chamber are beyond the influence of expansion and contraction of the ring.

6. After the investment has set thoroughly, the ring is removed from the sprue former; likewise the pin and wax cylinder are removed (Fig. 8).

7. The ring is mounted in the hole drilled in the back plate of the casting machine (Figs. 9 and 10), and a piece of cotton is placed at the orifice of the sprue hole to catch melted wax.

8. Direct a medium heavy brush flame squarely against the small end of investment, the blow-pipe being mounted in a small vise, so that the nozzle is three-fourths inch from the investment (Fig. 9). If the proper amount of investment and heat is used, the wax will be expelled in half a minute and the chamber will become red in about one minute later.

9. The flame is turned down and the crucible containing gold is placed in position (Fig. 11). Melt the gold and cast in the red hot mold. The average time consumed is about three minutes when Presto-Light or similar heat is used.

The smallest of three different-sized rings is usually used for bicuspid mesio-occlusal inlays or disto-occlusal inlays, one teaspoonful (4 Gm.) of investment being sufficient for such cases. Because of the small amount of investment used, such a mix has to be made by hand. Centrifugalize all hand mixes.

ANNOUNCEMENT OF BOOKS RECEIVED

OPERATIVE DENTISTRY, Revision of G. V. Black's Work with which his Special Dental Pathology is combined, By Arthur D. Black, M.D., D.D.S. Four Volumes: I. Pathology of the Hard Tissues of the Teeth; Oral Diagnosis; II. Technical Procedures; Materials; III. Treatment of Dental Caries; IV. Pathology and Treatment of Diseases of Investing Tissues of Teeth, Dental Pulp, and Periapical Tissues. Seventh Edition, Illustrated. Chicago, Medico-Dental Publishing Company, 1936.

ROADS TO HEALTH AND HAPPINESS, by Oscar C. Mueller, New York, Prentice-Hall, Inc., 1936.

FULL AND PARTIAL DENTURE PROSTHESIS (Illustrated), By Lee Walter Doxtater, D.D.S., Brooklyn, New York, Dental Items of Interest Publishing Company, 1936.

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Dental Disease and the National Health

(Significant Excerpts)

[Sir Norman Bennett, M.B., B.CH. Cantab., M.R.C.S.Eng., L.R.C.P.Lond., L.D.S., Eng.: Dental Disease and the National Health, The British Dental Journal 61:47 (December 15) 1936.]

1. "It is established that you cannot have a nation of healthy people with unhealthy mouths, and that great as has been the advance in public dental service from small beginnings . . . the number of unhealthy mouths has not been very much reduced."

2. "It is true that the effects of an unhealthy mouth vary enormously in different individuals living under various conditions, and that many people with septic mouths are apparently quite well, though this is less true for middle age than for youth. But in the aggregate it is definitely accepted that diseased oral conditions are responsible for a vast amount of chronic ill-health, invalidity, and loss of working-time."

3. "Treatment of caries in a tooth has no finality about it; subsequent treatment may be necessary. With long quiescent periods, caries around fillings, caries in new places, extension of small undiscovered cavities, may all progress so far that the amount of treatment required is much increased and previous good work often partly wasted. Inspection of children's teeth takes very little time; treatment takes a long time; there is no economy in avoiding sufficiently frequent inspections. Indeed, it may almost be said that unless dental treatment for school children is sufficiently frequent, it might almost as well not be done at all."

4. " . . . Dental caries . . . is the most prevalent and most disastrous disease affecting the teeth of children. But maldevelopment of the jaws, misplacement of the teeth encouraging dental caries, errors of occlusion, or the masticatory relationship between the two dental arches, contracted arches associated with adenoids and mouth breathing, protruding front teeth leading to parodontal disease, are extremely common . . . . They call for remedial measures. . . . It is necessary to stress the wastefulness and ineffectiveness of a partial school dental service, because it is not generally under-

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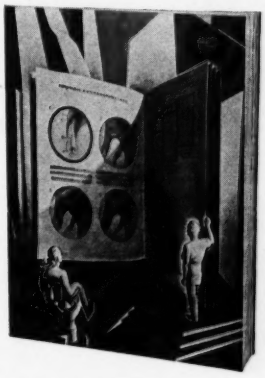

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stood that completeness is of the essence of dental treatment."

5. "I am sure that if an intensive and systematic attempt were made to teach all children of 5 years of age the elements of dental hygiene by means of talks, demonstrations, and especially films, the amount of treatment required would be much reduced, and the children would become more ready patients. After all it is more important that a child should know something about his mouth and teeth than how many wives Henry VIII had, and by what means they passed out from this world. With parents, talk and persuasion are the best."

6. "It has been proved that the structure and calcification of the teeth are controlled by vitamin D, and that lack of this vitamin causes defective structure, and that teeth of defective structure are more susceptible to dental caries; and, less conclusively, that vitamin D inhibits the progress of dental caries. But it has not been proved that teeth of perfect structure are immune to dental caries; indeed, there exists a considerable body of evidence to the contrary. . . . There is little doubt that both from the point of view of the development of the jaws and the prevention of both dental caries and parodontal disease the physical character of food-stuffs and methods of preparation are of vital importance."

7. "If there were effective propaganda about diet, systematic instruction of children about teeth, complete dental treatment of mothers, correct feeding of infants, and complete dental treatment of the preschool child, school dental treatment would be reduced to manageable proportions."

8. "Education authorities seem sometimes more willing to spend money on something that shows—like buildings and equipment—than to afford fair remuneration and terms of service to professional people."

9. "The public conscience has awakened to a new sense of values, to the belief that for a people, as for an individual, wealth and possessions without health and strength do not bring happiness, and that a warped mind is apt to dwell in a deformed or diseased body."

10. "The nation that first learns to feed its children properly, to prevent the development of disease, to

ensure a clean and healthy mouth, and to cultivate the bones, sinews, and muscles, will find that mental education follows more easily in the train of all these, and will lead the world. Is any one prepared to say that as a nation we cannot afford to be healthy, or that some must be diseased in order that others may live in luxury?"

Dietary Fads and Fallacies

(A Digest Report)

[Howard W. Haggard, M.D.: Dietary Fads and Fallacies, The New York Journal of Dentistry, 7:9 (January) 1937.]

DOCTOR HOWARD W. HAGGARD of Yale University sounds a timely note, well-voiced, with respect to the rôle of the dentist in influencing and checking popular notions about diet.

Doctor Haggard traces dentistry from the period of *odontalgia*, when the dentist saw "no deeper than the crown of the tooth upon which he worked," through the bacteriologic epoch when dentistry was seen as a means of preventing systemic disease; but the detection of focal infection could not prevent dental disease itself. The dentist, Doctor Haggard points out, has gone beyond his medical colleague in his social approach. The dentist has accomplished the public habit of regular dental examinations to a very much greater degree than the physician has been able to persuade the public of regular medical examinations. He stresses significantly that the mere fact that he (the dentist) must preach detection, must preach periodic examination, is of itself indicative of the fact that he has developed no valid method of preventing the occurrence of dental disease . . . Dentistry has developed treatment, but it has not developed prevention . . . Everyone must realize that methods inevitably reach a limit of refinement; that there comes in time an end to improvement in technique, material, and instrumentation. Then if no new fundamental principle comes to open up a further avenue for progress, dentistry will certainly stop its advancement and stand still . . . There has been no startling innovation in dentistry in the last decade. Public education has been, I suspect, the most important development of this period . . .

Doctor Haggard further traces dentistry through its cosmetic stage when it supposed that a clean tooth would not decay. "In consequence of

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his propaganda there came about a great and desirable change in the personal toilet of the American public . . ."

The tooth now ceases to be an isolated local structure; it is an integral part of the body, the structure of which must be strengthened to resist injury. Genetics, endocrinology, and diet are the three obvious possibilities to offer the fundamental principle upon which dentistry's advance may be predicted. There is not much that the dentist can do from the genetic standpoint, except that as the recognition of sound, well formed teeth becomes increasingly a beauty asset, "dental improvement would become still more a matter of natural sexual selection." Endocrinology is promising and potentially significant, but too much of our knowledge of glandular behavior is still experimental and not actual.

Diet offers more immediate possibilities; but the subject, particularly with reference to vitamins and deficiencies, has suffered from all the errors of enthusiasm.

The body is not a plaything of the diet, it is not determined by the diet. Man's body is not a product of the kitchen. There are laws that govern growth and function quite aside from diet. They can be influenced markedly only in one direction: the direction of incompleteness due to dietary deficiency. Proper diet of the pregnant woman, the child, and the adult, is no cure-all for dental disturbance.

The dentist is in a particularly advantageous position, not only to encourage proper selection of diet, but to discourage the dietary fallacies that spring up so plentifully in this country and take their toll of consequences in unbalanced diets, whether it is unbalanced diet in regard to teeth or body generally. It is as important for the dentist to look out for the body, so far as he can, as for the teeth alone, because . . . the dentist's obligation does not end with the crown and root of the teeth, it extends throughout the entire body.

The consumption of vitamins has been encouraged by the profession beyond all necessary requirements. Now disturbing reports are beginning to be made because of excesses even in these substances. It is for the dentist to know and to preach correctly the principles of dietetics. He has the opportunity to do this if he will.

Doctor Haggard concludes:

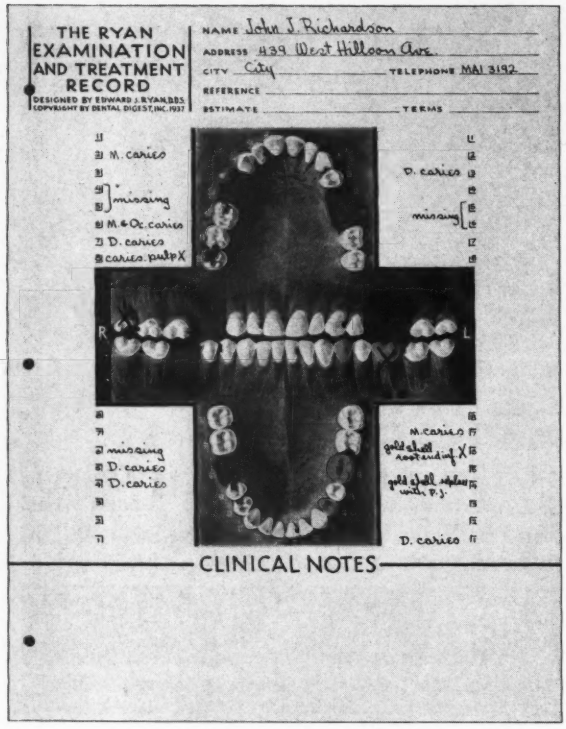
"The only hope it seems to me, of contending with the food fads and fallacies, indeed all popular medical fads and fallacies, is by developing in

The Ryan

Examination and Treatment Chart

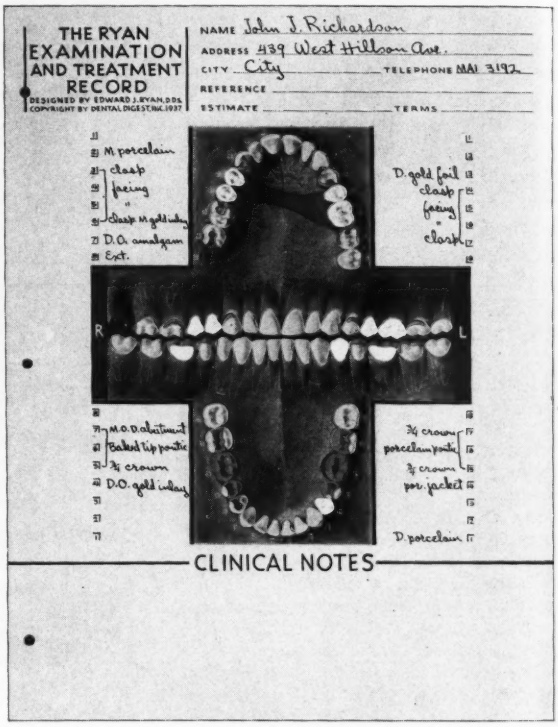
Exact reproduction on opposite page

An anatomically accurate chart which makes conditions and treatment crystal-clear to the patient



Examination Record

Above is a miniature reproduction of a completed examination record on a Ryan chart. With colored crayon and pencil, conditions are graphically illustrated. Additional examination data are recorded in the corner spaces. With the completed examination record the patient can see an accurate illustration of the condition of his mouth. The patient actually sees and can readily understand the work to be done.



Treatment Record

This is a small reproduction of the treatment record of the same mouth. Appliances, inlays, crowns, missing teeth, etc., are indicated in crayon and pencil. Teeth are shown in white on a black background. Thus missing teeth are clearly shown by penciling out the proper teeth. The patient can see how his mouth will appear when restoration is completed. The charts provide him with a crystal-clear "before and after" comparison.

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the public what is essentially a scientific skepticism with which they themselves can evaluate such popular questions."

Facts on Dentistry in Russia*

In 1921 there were 1881 public dental clinics employing 2034 dentists. By the end of 1927 the number of dentists employed by the State had reached 6500.

In 1924, 2,168,257 persons were treated in the State clinics; in 1927 the number had increased to 4,570,976. In 1936 the estimated number was 30,000,000. (The population of the Union of Socialist Soviet Republics is more than 180 millions.)

In 1913 (before the Revolution) 128.5 million rubles were allocated for public health; in 1935, 5,065 million rubles.

In the training of dental students excellent instruction in the medical subjects is given. They have poor training in prosthetics; good training in orthodontia.

Most of the dental students are women.

School children, the Red Army, and all workers are obliged to have periodic dental inspection and treatment.

Little gold is used. Stainless steel and chromium-plated silver are used extensively.

The Soviet industry makes all dental instruments, equipment, and materials.

Supplies: Dental rubbers are bad. Porcelain teeth are good and varied in mold but inferior in subtlety of shade and range of coloring. Cements are excellent, of the utmost purity.

Equipment: Pneumatic seats and back rests on dental chairs. Arms and foot-rests are tubular stainless steel. There are no foot engines.

Private Practice

Private practice is permitted. All accounts must be produced for State examination, and fees are regulated. The employment of professional assistance, or partnership is prohibited. The employment of nonprofessional assistance is subject to conditions laid down by the State. Wages and hours of work are uniform and regulated by the State. Professor Lukomsky told me that there were about 10,000 den-

*Toller, J. R.: Stomatology in the U. S. S. R., D. Mag. & Oral Topics, 54:11 (January) 1937.

tists in the U. S. S. R. employed by the State, and about 3,000 private practitioners. They aim to have one dentist to 12,000 population . . . There is far less dental disease than in England, or than I have observed in Germany and Poland. Their diet is more elementary . . . Apart from the private practitioners, no private profit is made out of the curing of disease which has been allowed to arise. The policy of the U. S. S. R. is to prevent disease; it is cheaper than cure. Because of this fundamental axiom there is a tendency for the private practitioners to decrease in numbers relatively, for they cannot by their nature participate in any campaign of prevention. The private practice of any profession or craft will probably never be prohibited, nor is there anything in the communistic philosophy to oppose it. But the exploitation of man by man is forbidden . . . Of course, private practitioners in the U. S. S. R. seldom see children, soldiers, or ordinary workers. Their clients are the "intellectuals," other craftsmen, and the better-paid workers . . . Their work is as good generally as that of private practitioners in England, but they are much slower workers. Their bridges are much better, and their dentures much worse. General anesthetics are not much used. They do not hesitate to insert the needle extraorally if it is easier to do so. The second division of the fifth cranial nerve is blocked as frequently as the third. They are experts in dealing with dead teeth and are, like most continental dentists, loathe to extract them. In the manipulation of stainless steel they are ahead of German or English dentists. In general their practice is very like that of German dentists, but they handle their patients, of course, differently. There is no professional "secrecy" in the U. S. S. R. Your patients at any time can find out, if they do not know, exactly what your expenses are, and what your materials cost. In the windows of the dental depots the equipment of dental practitioners is displayed with price tickets in the same way as food or shoes.

Salaries

Real wages are not money wages. It is sufficient to say that the wages of dental surgeons are roughly equated to those of school teachers and "doctors," all of which are considered of equal importance to the community, and they live at about the same rate as elementary school teachers do in England.

At the present rate of increase in the standard of living of everyone in the U. S. S. R., it is hoped that the indiscriminate consumption of confections and highly refined carbohydrate foods will not increase disproportionately, and the contingency arise that I am sure will in our own depressed areas if there is a return to prosperity and general employment. The Soviet stomatologists are aware of this risk, but are not afraid, for their ally is an educated, cultured and enthusiastic people; a people who, although at present they do not enjoy many of the material amenities we take for granted, have the satisfaction of knowing that no work they do will increase another man's wealth, but that of the Union of which they are all citizens. And they work hard.

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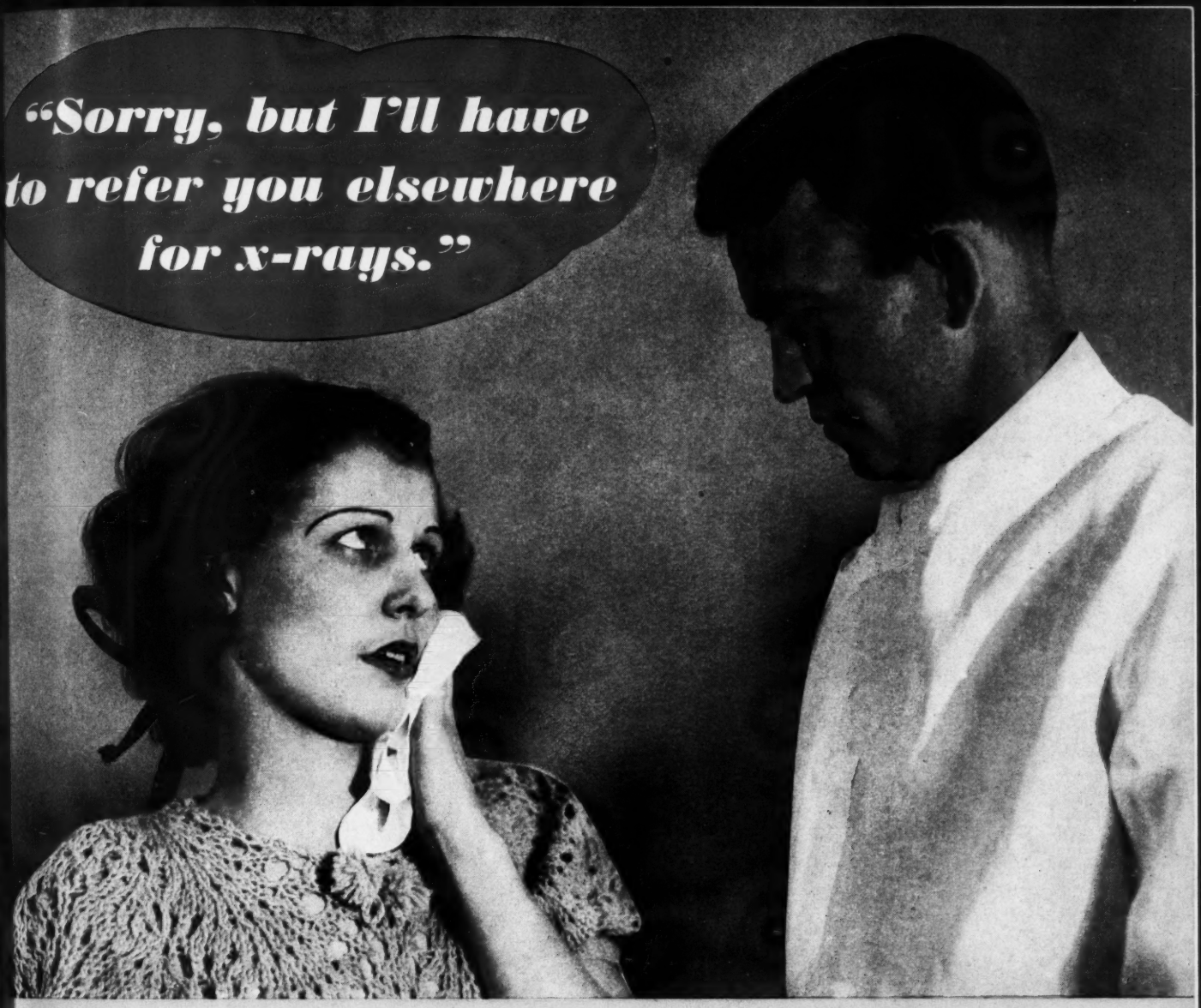
The Publisher's *Notebook*

LAST MONTH, A friend of the magazine wrote to praise the new cover and the new type dress; a staff member replied, "We *are* proud of the new book, but not too proud, because we hope to continue improving it." Read by itself, that sentence perhaps sounds as though its writer were displaying a bit of false modesty. That is not the case, however. It is just a natural expression born of the knowledge that any magazine must ever be fresh and new. Of course it isn't sensible to change a paper's physical appearance every little while, although I do believe that this should be done periodically. But there is a constant obligation to present new ideas, and to perfect the methods by which they are projected from the authors' to the readers' minds.

Here in the publication office, we are thankful that this is not an obligation of ours. Occasional changes in the magazine's physical form are comparatively easy to achieve. The obligation and the burden really fall upon the editors, and their task is constant: a fresh, new, better magazine every thirty days means never-ending experimentation, searching, planning, and execution.

For example, the series which started last month, "What Twelve Hundred Patients Know About Dentistry," required more than a year's work, as I mentioned here in the Notebook in the last issue. The result is a few pages in each of four numbers of THE DIGEST. The second installment appears this month. Back of these few pages of type and charts, reposing now in the files of the editorial office, are fat sheaves of correspondence with the thirty-seven dentists who collaborated with the editors; about 1,200 filled-in questionnaires furnished by their patients; sheet after sheet bearing the preliminary analyses based upon a careful study of the many hundreds of replies; first drafts of the material



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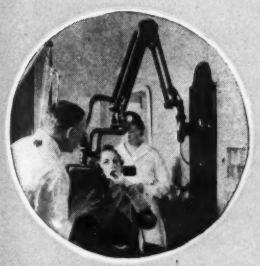

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which, in its final revision, is appearing in the pages of the magazine.

Meanwhile, as this is written, page proofs of the entire series are on their way to the thirty-seven dentists who cooperated with our editors, along with letters seeking their opinions respecting the published results. It is hoped that this will develop further worthwhile material.

The reader sees a few pages of print in the magazine, and naturally does not realize how great a stack of material it was necessary to accumulate, digest, and interpret so as to provide him with the information in terse, compact form. Obviously, too, the reader can scarcely be expected to realize how many hours of time were devoted to conceiving the ideas upon which these articles are based and to planning the methods for giving substance to the original ideas before any of the data materialized.

This series is perhaps an extreme example of the unseen labor hidden by a few pages of print. But, generally speaking, the procedure is typical of any magazine edited in the modern manner. No longer is it sufficient for an editor to wait hopefully for manuscripts from which he may make a selection for each month's issue.

He must constantly study his special field; he must sense new trends, the direction of his field's evolution; the real needs of his readers. In other days, an editor was engaged in writing editorials during many of his working hours. Now he must read, and study, and observe at first hand, during many more hours than he writes. In a technical journal like THE DIGEST there is, moreover, the constant obligation to avoid repetition of information that has already been published elsewhere lest readers turn from the magazine with the comment that this article or that is "old stuff." Constant vigilance is necessary to avoid republishing, in a new arrangement of words, the twice (and thrice) told tale. The only valid reason for repetition is to present old but important information with much greater clarity and completeness than it ever has been before, so that a significant subject and its previously obscure points are illuminated helpfully.

There is, too, the constant obligation never to forget the reader's direct personal interest, his desire to be

informed and definitely aided in his daily work. Thus, it is not sufficient merely to provide him with material of purely academic interest, however attractively it may be presented. The aim must always be to seek and develop and plan and present material that may be translated into better dentistry by the majority of readers.

Beyond these considerations, another fundamental of sound technical editing must never be lost sight of: the obligation to verify, so far as it is humanly possible, the numerous scientific statements offered by contributors. This alone, one realizes upon reflection, requires hours of work—conscientious, painstaking study of the various authorities whose observations are employed or cited by authors.

Finally, modern editing in journals which, like THE DIGEST, seek to save the reader's time, requires a great deal of rewriting, recasting, and planning of illustrations, so as to reduce to compact form, without sacrifice of completeness, much of the otherwise highly acceptable material submitted for publication.

Thus, in a magazine like this, the reader sees the product of the modern editorial technique: not just manuscripts that Fate has sent the editors, but material created, or developed, or chosen to fit a comprehensive, detailed, and constantly changing pattern—a pattern that is in reality a sort of flexible "map" of the composite reader's intimate interests and complex problems.

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by

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DENTAL MEETING DATES

Greater Buffalo Spring Dental Meeting, February 24-26, Hotel Statler, Buffalo, New York.

Five State Dental Post Graduate Clinic, Wardman Park Hotel, Washington, D. C., March 7-10.

American Society for the Advancement of General Anesthesia in Dentistry, regular meeting, Tower Room, Hotel Montclair, New York City, March 22.

Louisiana State Dental Society, fifty-seventh annual meeting, Roosevelt Hotel, New Orleans, April 8-10.

Alabama State Dental Association, sixty-eighth annual meeting, Battle House Hotel, Mobile, April 12-14, 1937.

American Society of Orthodontists, thirty-fifth annual meeting, Edgewater Beach Hotel, Chicago, April 19-22, 1937.

North Carolina Dental Society, sixty-third annual meeting, Carolina Hotel, Pinehurst, May 3-5, 1937.

Cleveland Dental Society, sixth annual clinic meeting, May 3-4.

Dental Society of the State of New York, sixty-ninth annual meeting, Waldorf-Astoria, New York City, May 4-7.

Pennsylvania State Dental Society, sixty-ninth annual meeting, William Penn Hotel, Pittsburgh, May 4-6, 1937.

Tennessee State Dental Association, seventieth annual meeting, Knoxville, May 10-13, 1937.

American Dental Hygienists Association, annual meeting, Atlantic City, New Jersey, July 12-16.

Swampscott Convention, Northeastern Dental Society, New Ocean House, Swampscott, Massachusetts, June 7-9.

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